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ONTARIO GEOLOGICAL SURVEY

Open File Report 6040

Kimberlite Indicator Minerals from Till Samples in the River Valley–Verner Area, Northeastern Ontario

by

N.P. Tardif and D.C. Crabtree

2000

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*Miscellaneous Release-Data 67
Kimberlite indicator minerals from till samples in the River Valley-Verner area, northeastern Ontario; by N.P. Tardif and Crabtree, D.C.
This release consists of data related to kimberlite indicator minerals recovered from till samples collected in the River Valley-Verner area of northeastern Ontario. This data release consists of 9 sets of data stored as both ASCII (.txt) and Microsoft Excel (.xls) files. Data sets consists of; 1) definitions of abbreviations used in each of the data files (Intro); 2) sample site locations (NAD 83) (Appendix I); 3) summary of kimberlite indicator mineral counts (Appendix II); and 4) summary of microprobe data (wt% geochemistry) for kimberlite indicator minerals; garnets, chromites, Mg-ilmenites, olivines, pyroxenes and others (Appendix III). These files are on one 3.5 inch MS-DOS diskette.

This diskette is available separately from the report.

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Abstract

In 1999 the Ontario Geological Survey completed a study in the River Valley-Verner area of northeastern Ontario to determine the response of platinum and palladium in overburden materials. As part of that study, 32 C-horizon till samples were submitted for heavy mineral analysis. Results showed the presence of a number of indicator minerals commonly associated with kimberlite. Based upon these favourable results, an additional 95 till samples were submitted for heavy mineral analysis. From all samples submitted, a total of 441 kimberlite indicator minerals were recovered. Three hundred and fifty-nine kimberlite indicator mineral (KIM) grains including; 6 "G10" Cr-pyrope garnets, 3 diamond inclusion chromites, 5 kimberlitic chromites and 3 significant kimberlitic Mg-ilmenites were recovered in the eastern and northeastern parts of the study area. Other recovered KIMs include; "G9" Cr-pyrope garnets, megacrystic garnets, eclogitic garnets, kimberlitic Cr-diopsides and forsteritic olivines.

The presence of KIMs demonstrates the potential for kimberlites within the River Valley-Verner area and surrounding region. Elevated numbers of KIMs in the northeastern part of the study area suggests that kimberlite potential likely exists up ice. Further evaluation is needed north and east of this area to fully understand the distribution of these grains.

Introduction

During the summer of 1999 a surficial material sampling program designed to study the response of platinum and palladium in overburden was completed in the River Valley-Verner area of northeastern Ontario (Figure 1) (Tardif 2000a). The sampling program also included a kimberlite indicator mineral study where a total of 32 heavy mineral concentrate samples derived from C-horizon till were submitted for indicator mineral picking. From this study, significant numbers of kimberlite indicator minerals (KIMs) were recovered. Thus, an additional 95 heavy mineral concentrate samples, also derived from C-horizon till, were submitted for analysis. The results presented in this report represent a complete data set for all KIMs recovered from samples collected in the River Valley-Verner area.

The study area is located approximately 35 to 70 km east of Sudbury, in northeastern Ontario (Figure 1). An extensive and thick cover of glacial sediments was deposited across this area by an ice advance that flowed southward. A regional sampling study and 2 detailed case studies were completed, where C-horizon tills, B-horizon soils and humus samples were collected from a total of 172 sample sites (Figure 2).

Mineralogical analyses of surficial sediment samples have proven to be effective tools in exploration for kimberlites (Bajc 1993; Cheng et al. 1997; Fipke et al. 1995; McClenaghan et al. 2000; Morris and Kaszycki 1997). Glacial sediment mineralogy used in this report refers to the heavy mineral concentrate derived from C-horizon tills. From this sampling media, indicator minerals are recovered and analysis of the data derived from regional surveys can be utilized to highlight potential areas for exploration.

STUDY AREA

A total of 172 sites were sampled within the 20 townships that make up the study area (Figure 2) (Appendix I). The townships are; Scadding, Street, Awrey, Hawley, Davis, Loughrin, Hagar, Appelby, Janes, Henry, Ratter, Dunnet, Dana, Crerar, Hugel, Kirkpatrick, McWilliams, Gibbons, Badgrow and Caldwell. Samples were collected in areas accessible by road and trails at a density of approximately 1 sample per 3 km^2 (Tardif 1999).

The study area is represented on 4, 1:50 000 scale maps of the National Topographic Series namely, the Capreol (41-I/10), Coniston (41-I/7), Glen Afton (41-I/9) and Verner (41-I/8) sheets. It is bounded by longitudes 80°42′ W and 80°02′ W and latitudes 46°43′ N and 46°16′ N.

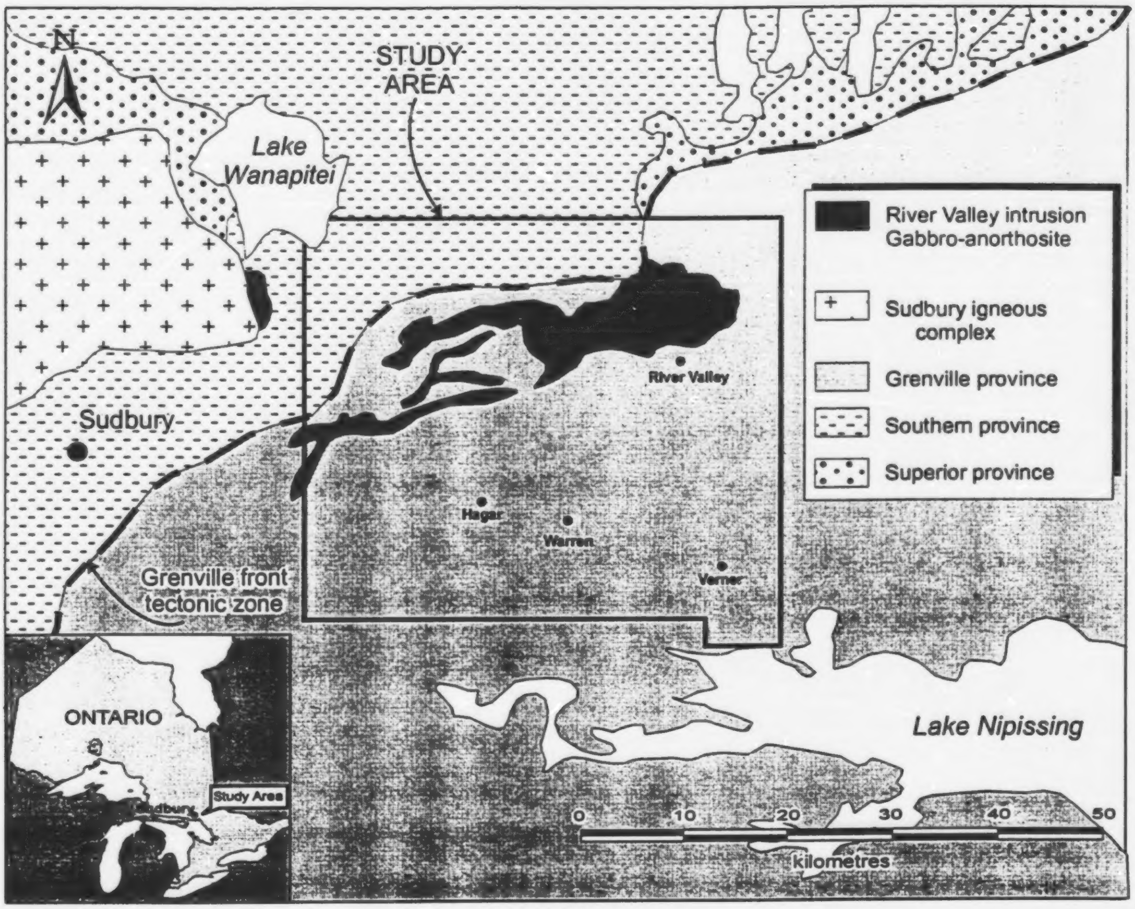

N
STUDY AREA
Lake Wanapitei
River Valley intrusion Gabbro-anorthosite
Sudbury igneous complex
Grenville province
Southern province
Superior province
River Valley
Sudbury
Hagar
Warren
Verner
Grenville front tectonic zone
ONTARIO
Study Area
Sudbury
Lake Nipissing
0
10
20
30
40
50
kilometres

Figure 1: Location and geology map of the study area.

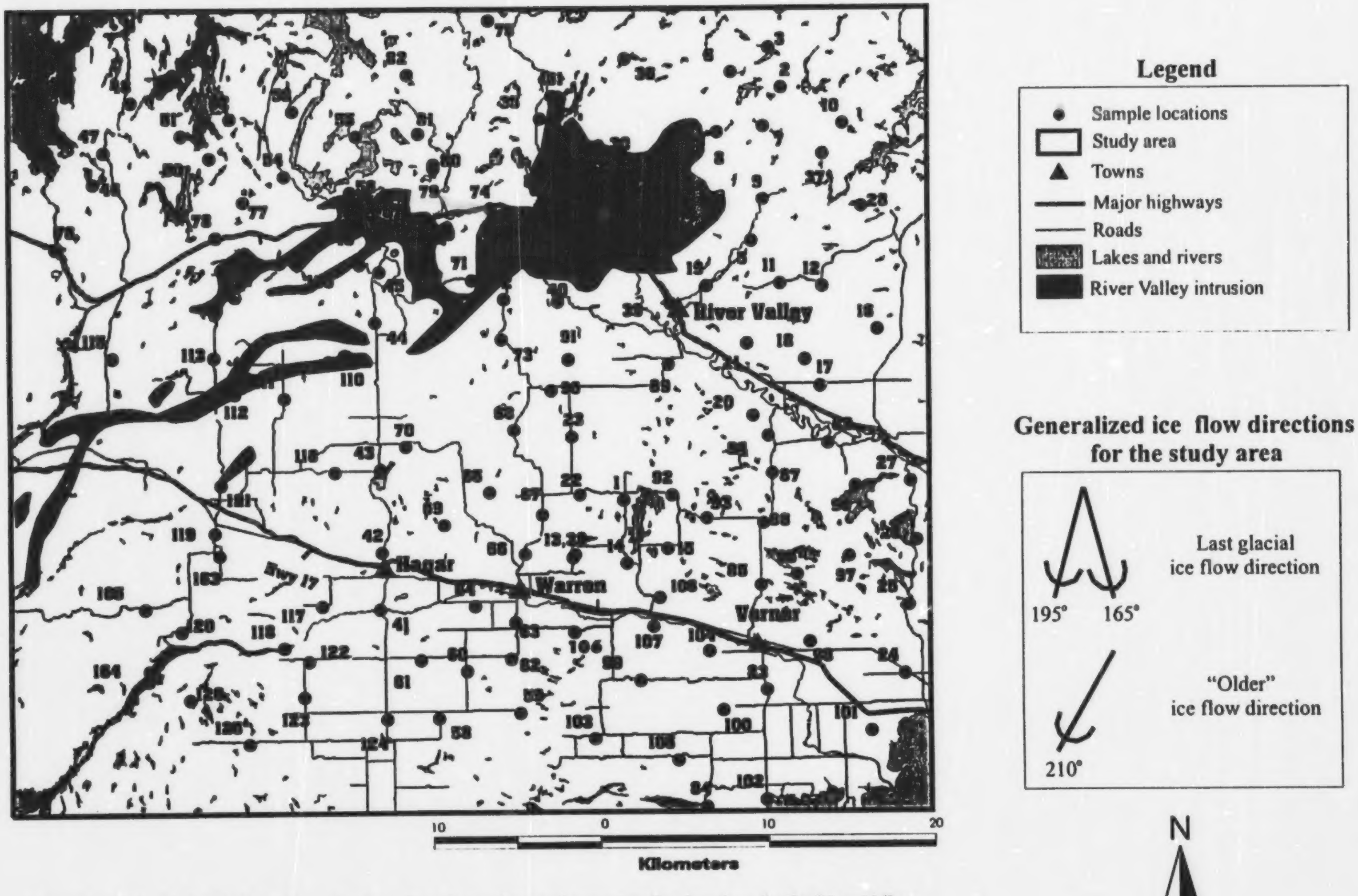

Legend
Sample locations
Study area
Towns
Major highways
Roads
Lakes and rivers
River Valley intrusion
Generalized ice flow directions for the study area
Last glacial ice flow direction
195°
165°
"Older" ice flow direction
210°
N
River Valley
Hagar
Warren
Verner
Hwy 17
10
0
10
20
Kilometers

Figure 2: Regional distribution of sample sites. Sample numbers and corresponding locations for the River Valley regional sampling program. The last glacial ice flow direction was generally towards the south-southwest. Striations vary between 165° and 210°.

Regional Geology

BEDROCK GEOLOGY

Six main rock types are present within the study area. These include; 1) the East Bull Lake suite of mafic and ultramafic intrusive rocks; 2) felsic intrusive rocks; 3) Nipissing diabase sills; 4) gneisses of metasedimentary origin; 5) undifferentiated mafic rocks; and 6) felsic migmatites and gneisses (Figure 3).

QUATERNARY GEOLOGY

Approximately 20 000 years ago, the entire study area was covered by the Laurentide ice sheet. Deglaciation of the Sudbury region, approximately 9500 to 11 000 years ago, resulted in the formation of large glacial lakes at the receding glacier margin. The last glacial lakes that occupied the area eventually drained, approximately 5500 years ago. The record of these glacial lakes is found in the glaciolacustrine (silt- to clay-rich) sediments that form the low relief lake plain in the southern part of the study area. Ice-contact stratified sediments are found in glacial landforms such as eskers, subaqueous fans and in outwash sediments. Ice-contact deposits are present along bedrock controlled valleys in the northern part of the study area (Tardif 1999).

The till samples collected in this study are light grey to olive grey in colour and contain a silty-sand to sandy-silt matrix. In the northern part of the study area, sandy till occurs as veneer overlying bedrock. Within the bedrock controlled valleys, thick deposits of outwash sands and gravels predominate. This outwash material continues into the central part of the study area where a series of deltaic deposits are present. In the southern part of the study area, the till matrix is siltier. Till samples can be collected along the margins of bedrock outcrops where they protrude above the lake plain (Tardif 1999).

Glacial grooves, striations and chatter marks found on bedrock surfaces provide good indicators of the direction of ice flow. Within this study area the last glacial ice flow ranged between 165° and 195°, with a mean orientation directed toward the south. A possible second ice flow direction was also observed, with a general flow direction toward the southwest (210°). This second ice flow direction appears to be older than the first and was observed at several sites in the northern part of the study area (Tardif 2000a, Figure 5).

Kimberlite Indicator Minerals (KIMs)

INTRODUCTION

Kimberlite indicator minerals are a suite of heavy minerals related to kimberlite or lamproite; potential host rocks for diamonds. They are coarse-grained, visually

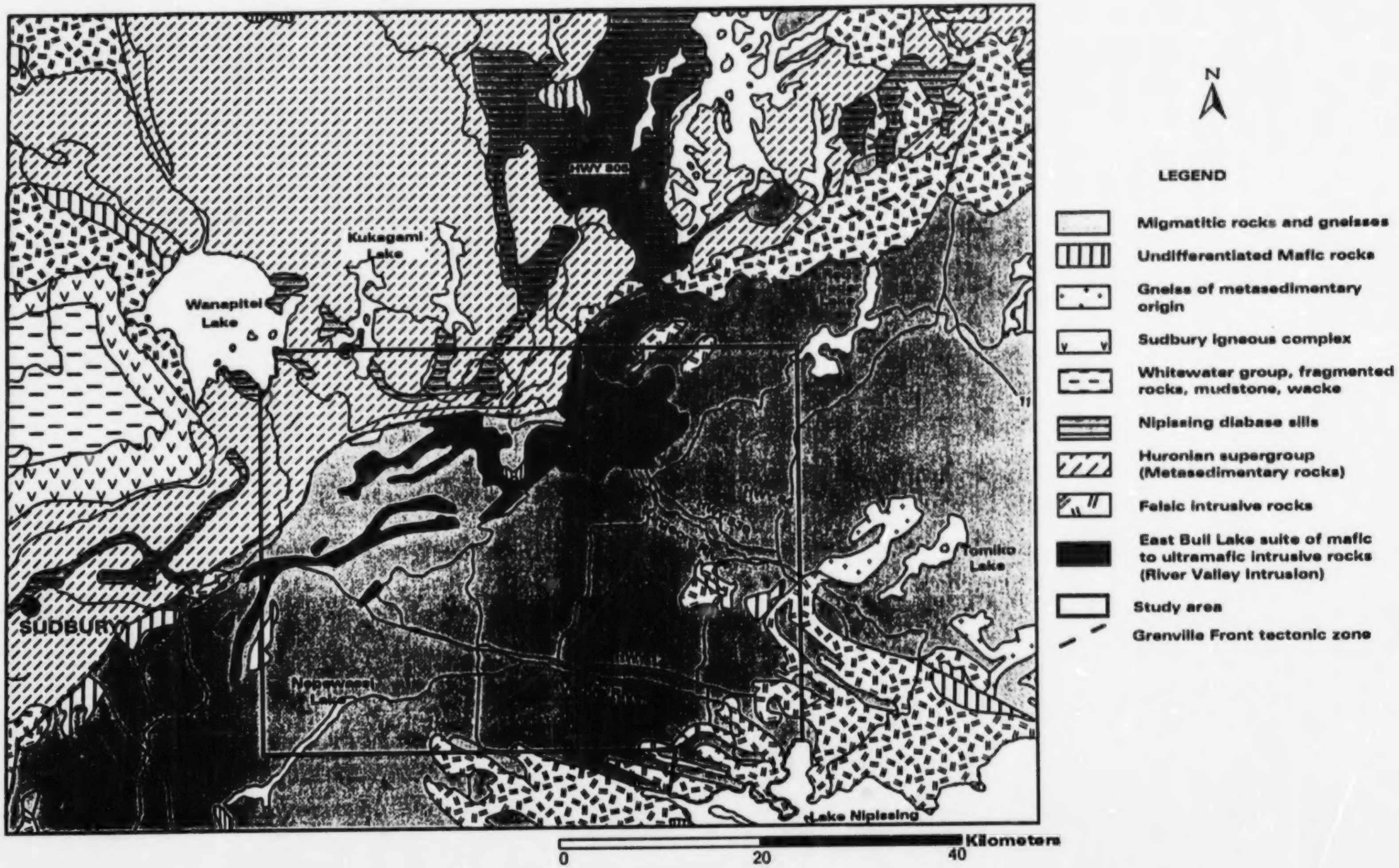

Wanapitei Lake
Kukagami Lake
HWY 805
Tomiko Lake
Nepewassi Lake
SUDBURY
Lake Nipissing
N
LEGEND
Migmatitic rocks and gneisses
Undifferentiated Mafic rocks
Gneiss of metasedimentary origin
Sudbury igneous complex
Whitewater group, fragmented rocks, mudstone, wacke
Nipissing diabase sills
Huronian supergroup (Metasedimentary rocks)
Felsic intrusive rocks
East Bull Lake suite of mafic to ultramafic intrusive rocks (River Valley intrusion)
Study area
Grenville Front tectonic zone
0
20
40
Kilometers

Figure 3. Bedrock geology of the study area (Modified from Ontario Geological Survey 1991).

distinctive, dense (S.G. >3.2) and resistant to weathering. KIMs™ are used to identify kimberlite pipes and their diamond potential.

Kimberlite indicator minerals were recovered from C-horizon till samples collected during the sampling survey. C-horizon in the study area can vary from a few millimeters to tens of meters in thickness. It is grey in colour, very poorly sorted, contains on average 30% striated and faceted subglacially transported clasts and has not been highly affected by weathering. Where possible, unoxidized till was collected from hand dug test pits and road cuts. A seven to ten kilogram bag of sieved till (7 mm sieve size) was collected and submitted for heavy mineral concentrate analysis.

Overburden Drilling Management (ODM), located in Nepean, Ontario, prepared 171, 7 to 10 kg C-horizon till samples for heavy mineral concentrates (HMC) and picked kimberlite indicator minerals from these samples. A complete explanation of laboratory methods used to process these samples is given in Tardif (2000a). Grains recovered from 127 samples were then submitted for kimberlite indicator mineral assessment and probing at the Geoscience Laboratories in Sudbury, Ontario (Appendix II). Common indicators found included; peridotitic Cr-pyrope garnets, megacrystic Cr-poor pyrope garnets, eclogitic pyrope-almandine garnets, Cr-diopside, Mg-rich ilmenites, chromites and forsteritic olivines.

GARNET

Garnets occur in many types of peridotites but the most important are harzburgite and lherzolite (Stephenson et al. 1999). Most garnets from harzburgite peridotites ("G10" garnets) are commonly associated with diamonds and are characterized by Ca depletion and Cr enrichment (Gurney 1984). This strong association of harzburgitic "G10" garnets with diamonds suggests that they are more important than "G9" garnets of lherzolitic origin (Dawson and Stephens 1975).

Eclogitic garnets are another important KIM. They are Cr-poor and range from pyrope to almandine-pyrope in composition (Stephenson et al. 1999). Diamondiferous eclogitic garnets typically have Na_2O concentrations greater than 0.07% (Fipke et al. 1995) in conjunction with generally low TiO_2 values. Eclogitic garnets with low Na concentrations are not commonly associated with diamonds but may be useful indicators if found with other KIMs (Stephenson et al. 1999). Garnets containing higher TiO_2 values (>0.4 wt%) in conjunction with low Na values and low levels of Cr (<2 wt%) are of the megacrystic suite. The megacrysts or "discrete nodule" suite of garnets are believed to be high pressure cognate (magmatic) phases crystallized from primitive kimberlitic melts (Mitchell 1986).

Microprobe analysis of 157 garnet grains submitted to the Geoscience Laboratories revealed the presence of 92 "G9" Cr-pyrope garnets and 6 "G10" Cr-pyrope garnets (in samples 99-NPT-012, 99-NPT-029, 99-NPT-031, 99-NPT-091, 99-NPT-105 and 99-NPT-135) of peridotitic origin (Figure 4a). The line distinguishing between "G9" and "G10" garnets on the Cr_2O_3 (wt%) vs CaO (wt%) diagram is referred to as the 85% line by Fipke et al. (1995). All grains plotting within the 15% marginal error zones

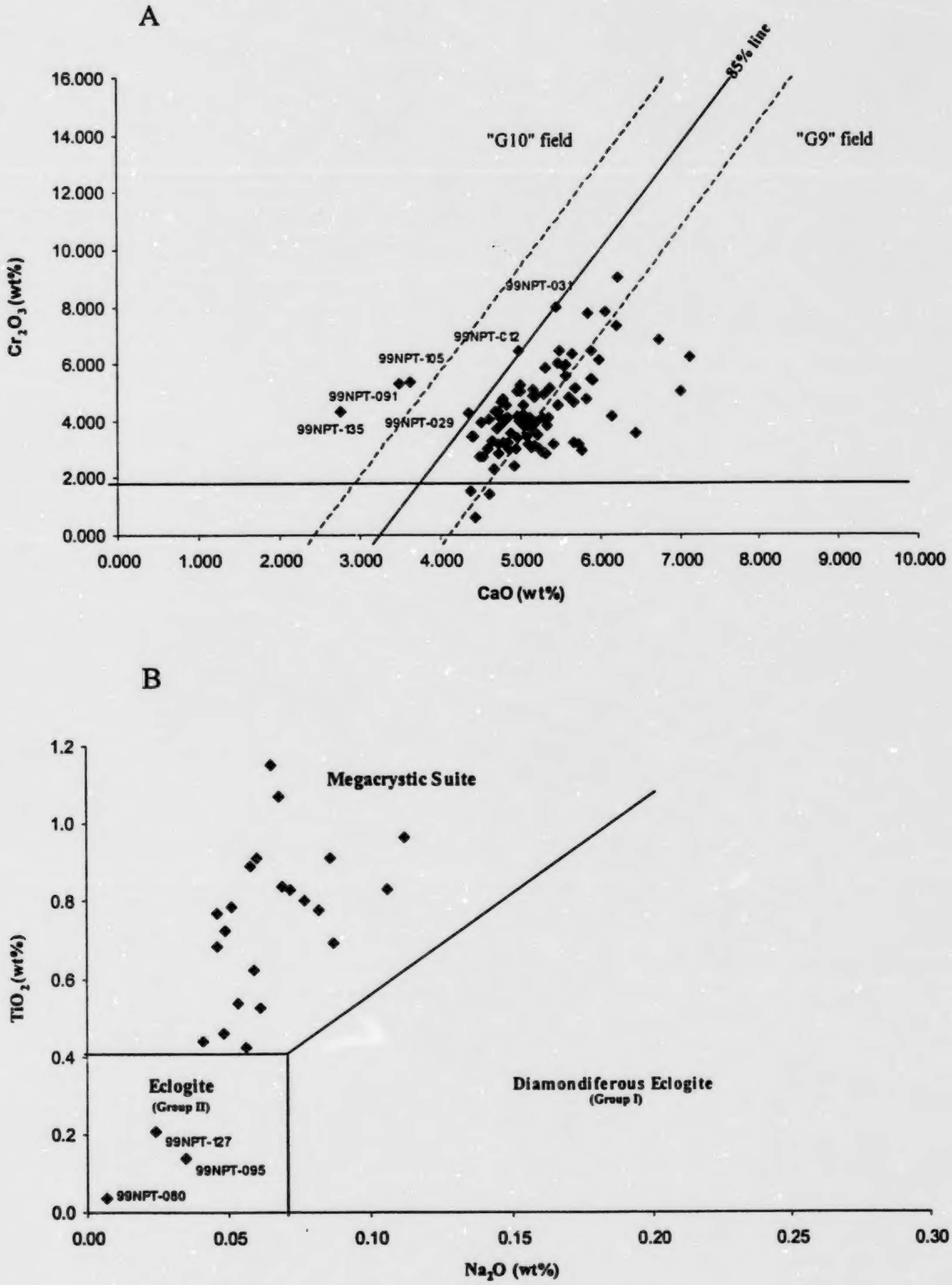
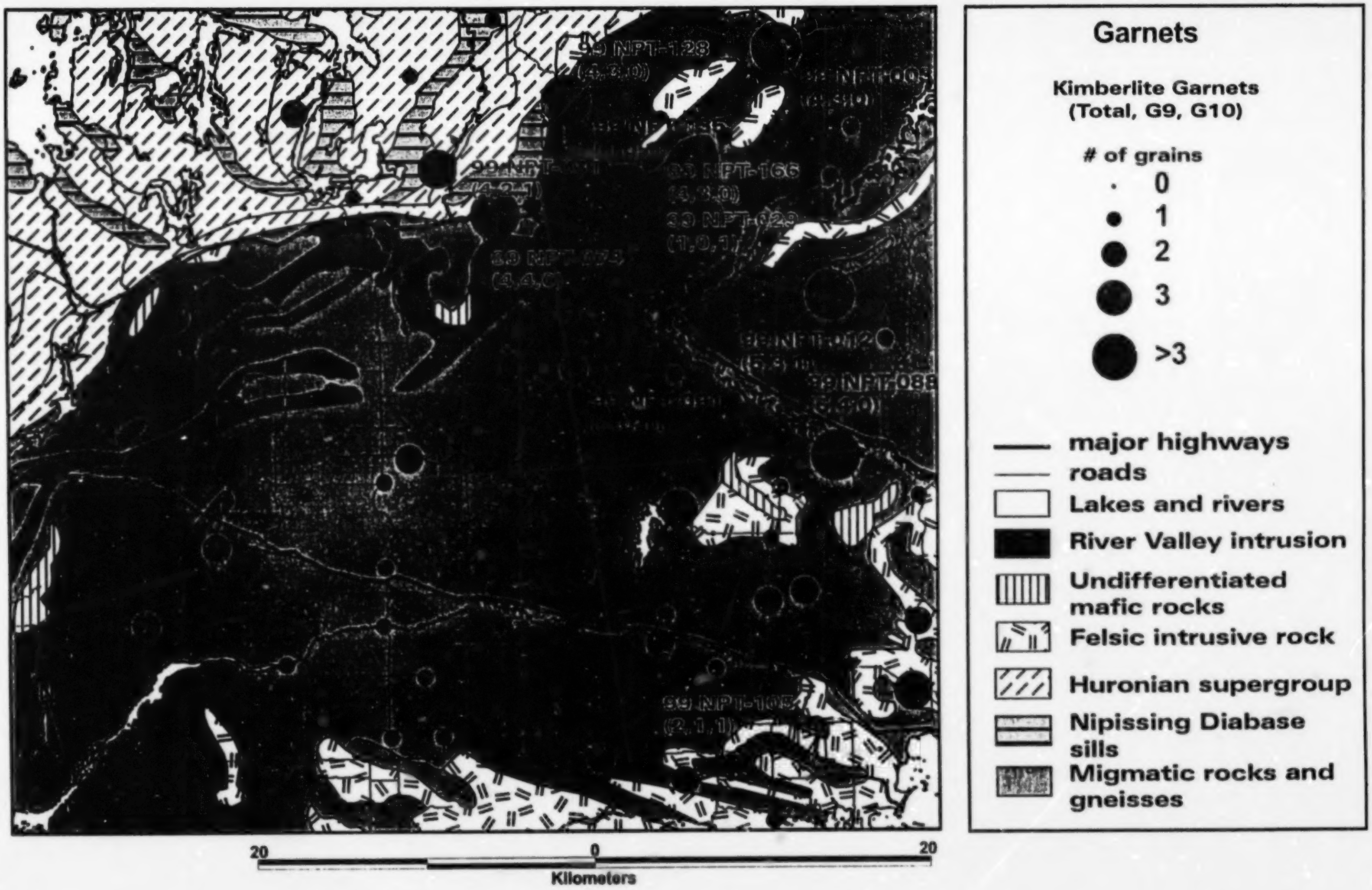


Figure 4: Garnet Cr_2O_3-CaO and TiO_2-Na_2O plots. A) "G10" and "G9" Cr-pyrope garnet Cr_2O_3-CaO plot (after Dawson and Stephens 1975). B) Eclogitic Garnet TiO_2-Na_2O plot (after Fipke et al. 1995).



99 NPT-128
(4,3,0)
99 NPT-003
99 NPT-166
(4,3,0)
99 NPT-029
(1,0,1)
(4,2,1)
99 NPT-074
(4,4,0)
99 NPT-012
99 NPT-088
99 NPT-103
(2,1,1)
20
0
20
Kilometers
Garnets
Kimberlite Garnets
(Total, G9, G10)
# of grains
0
1
2
3
>3
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses

Figure 5: Regional distribution of kimberlite indicator garnet grains. Numbers in brackets represent (number of total, number of G9, number of G10).

(indicated by dotted lines) must be considered with caution (99-NPT-012, 99-NPT-029, 99-NPT-031). However, all grains plotting beyond the 15% line, within the "G10" field, are very significant to this study (99-NPT-091, 99-NPT-105, 99-NPT-135). Of the remaining 58 grains, none classify as Group I eclogites, 3 are Group II eclogites (99-NPT-127, 99-NPT-095 and 99-NPT-080) and 21 fall in the megacrystic suite on the TiO_2 vs. Na_2O wt% diagram (Figure 4b).

Other garnets identified include; almandine, Mn-almandine, spessartine and andradite. These are not likely associated with kimberlite and are of little interest to kimberlite exploration. Weight percent geochemistry for all garnet grains is listed in Appendix III.

The regional distribution of kimberlite indicator garnets (Figure 5) shows that the eastern part of the study area has anomalous or elevated concentrations of garnets KIMs. Five "G10" garnets have been recovered from the northeastern part of the study area where higher numbers of "G9", eclogitic and megacrystic garnet grains are also observed.

CHROMITE

It is very difficult to classify chromites as kimberlite indicator minerals because of their presence in many different rock types, thus, compositional overlap is inevitable. The wt% Cr_2O_3 vs. TiO_2 chromite discriminant diagram is used to determine whether chromites originate from lamproites and kimberlites (Fipke et al. 1995). Within this diagram are 3 fields; 1) a kimberlite and lamproite field; 2) a non-kimberlitic/lamproitic field; and 3) an overlap field. Chromite grains plotting in the overlap field are still significant and are therefore included in the KIM database (Appendix II). A chromite grain plotting in the "diamond inclusion field" on a wt % Cr_2O_3 vs MgO diagram is as significant as finding a "G10" garnet. These chromites are characterized by a Cr_2O_3 content greater than 61 wt% (Gurney 1984) and an MgO content greater than 10 wt% (Fipke et al. 1995).

One hundred and eighty-three chromite grains were recovered from picking. Two plotted in the diamond inclusion field on the wt% Cr_2O_3 vs MgO diagram (from samples 99-NPT-012, 99-NPT-140) and one plotted in the diamond intergrowth field (from sample 99-NPT-074) (Figure 6a). Five grains plotted in the field unique to kimberlites and lamproites of the Fipke et al. (1995) TiO_2-Cr_2O_3 diagram (99-NPT-029, 99-NPT-030, 99-NPT-057, 99-NPT-070, 99-NPT-132) (Figure 6b). Caution must be taken when dealing with these 5 grains because they plot near the border between the field unique to lamproites and kimberlites and the overlap field where marginal errors occur. Note that grain 99-NPT-029 plotted in the diamond inclusion and intergrowth field of the Fipke et al. TiO_2-Cr_2O_3 diagram. This grain was included in the overlap field, as the MgO value is regarded as being too low to include in the diamond intergrowth or inclusion field. The remainder of the 175 grains plot in a field with severe compositional overlap with crustal chromites. However, because of the possibility that these grains might be kimberlite indicator minerals, they have all been included in the KIM data set (Appendix II).

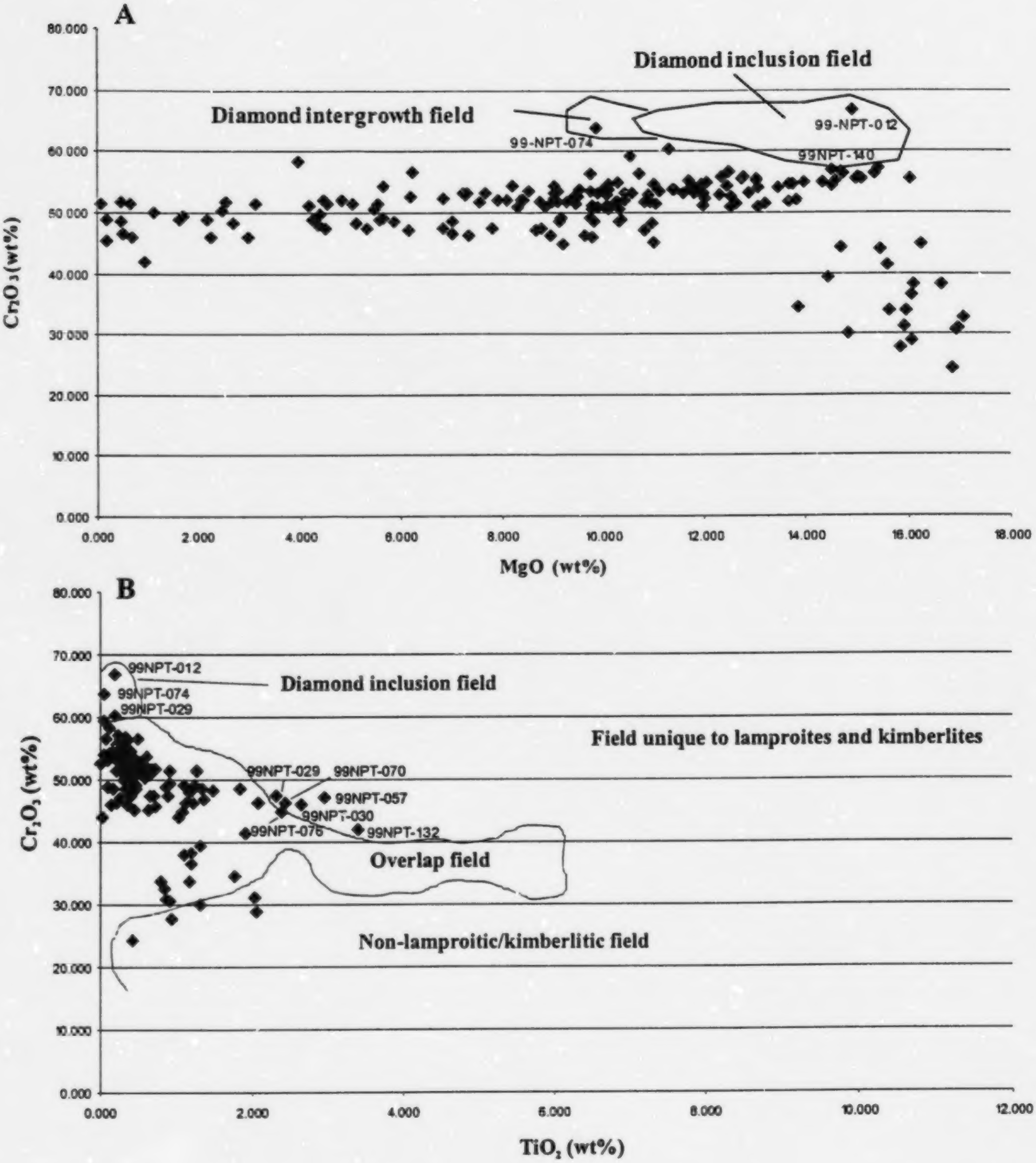


Figure 6: Chromite plots. A) Chromite Cr_2O_3-MgO plot. B) Chromite Cr_2O_3-TiO_2 plot. (After Fipke et al. 1995)

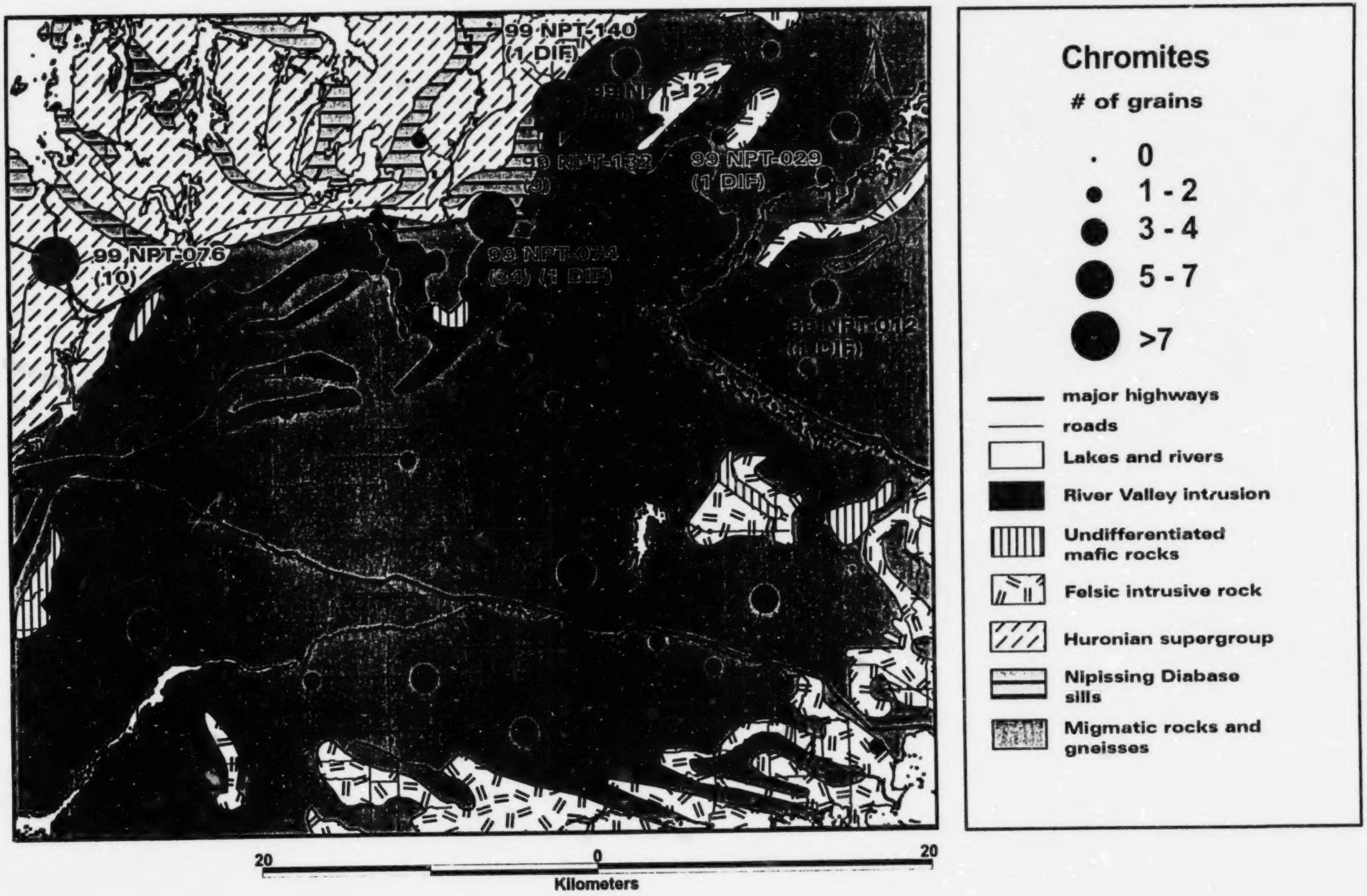

99 NPT-140
(1 DIF)
99 NPT-127
99 NPT-132
(9)
99 NPT-029
(1 DIF)
99 NPT-076
(10)
99 NPT-074
(34) (1 DIF)
99 NPT-012
(1 DIF)
N
Chromites
# of grains
0
1 - 2
3 - 4
5 - 7
>7
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses
20
0
20
Kilometers

Figure 7: Regional distribution of kimberlite indicator chromite grains. Numbers in brackets represent total number of kimberlite indicator chromite. DIF = diamond inclusion Field

The distribution diagram of kimberlite indicator chromite grains indicates a greater concentration in the northeastern part of the study area (Figure 7). Samples plotting in the diamond inclusion field of the Fipke et al. (1995) chromite discriminant diagrams also plot within this part of the study area. Caution must be exercised in interpreting these chromite signatures as being kimberlitic because the underlying River Valley intrusion is composed of mafic metavolcanic rocks where many chromite grains may be associated with base metal mineralization.

MG-ILMENITE

Ilmenites found within kimberlites contain MgO values between 4 and 15 wt%, and Cr_2O_3 values greater than 2 wt% (McCallum and Vos 1993). These ilmenites are considered useful kimberlite indicator minerals (Morris and Kaszycki 1997) when found in conjunction with other KIMs. However, caution must be taken when analyzing these grains because other mafic and ultra-mafic alkaline rocks also exhibit Mg-ilmenite.

One hundred and forty-five Mg-ilmenite grains from the study area underwent microprobe analysis. Forty-one grains contained MgO contents between 4 and 15 wt%. These grains were plotted on Gurney and Moore's (1991) Mg-ilmenite parabolic plot in order to determine whether they originated from a reducing environment (favorable for diamond preservation within the magma) or from an oxidizing environment (conductive to diamond resorption into the magma) (Figure 8). Seventeen grains plotted in the reducing environment field and were included in the KIM data set (Appendix II). Only 3 of these 17 grains contain Cr values greater than 2 wt% (99-NPT-003, 99-NPT-154).

The distribution of Mg-ilmenite grains within the study area indicates the kimberlite potential is highest in the northeast (Figure 9).

CR-DIOPSIDE

Cr-diopsides can be found in both megacrystic and groundmass phases within kimberlites (Morris et al. 1999) and in basic and ultramafic rocks (diabase sheets and/or River Valley intrusion). For this reason, on its own it is not a good indicator mineral. However, when found with other indicator minerals, Cr-diopside can be useful. Recently, Morris et al. (2000) have developed an excellent way of discriminating between Cr-diopsides from kimberlite and other sources using a Cr_2O_3, Al_2O_3 and Na_2O molecular wt % ternary plot. This plot has been tested on kimberlites and other rock types (Morris et al. 2000) and seems to isolate Cr-diopsides associated with kimberlites.

In this study, 184 Cr-diopside grains were sent to Geoscience Laboratories for microprobe analysis. Seventy-eight of these grains plotted in the "kimberlite field" of Morris et al.'s (2000) ternary plot (Figure 10a). These grains have been added to the KIM™ data set. The distribution of Cr-diopside grains (Figure 11) shows anomalous

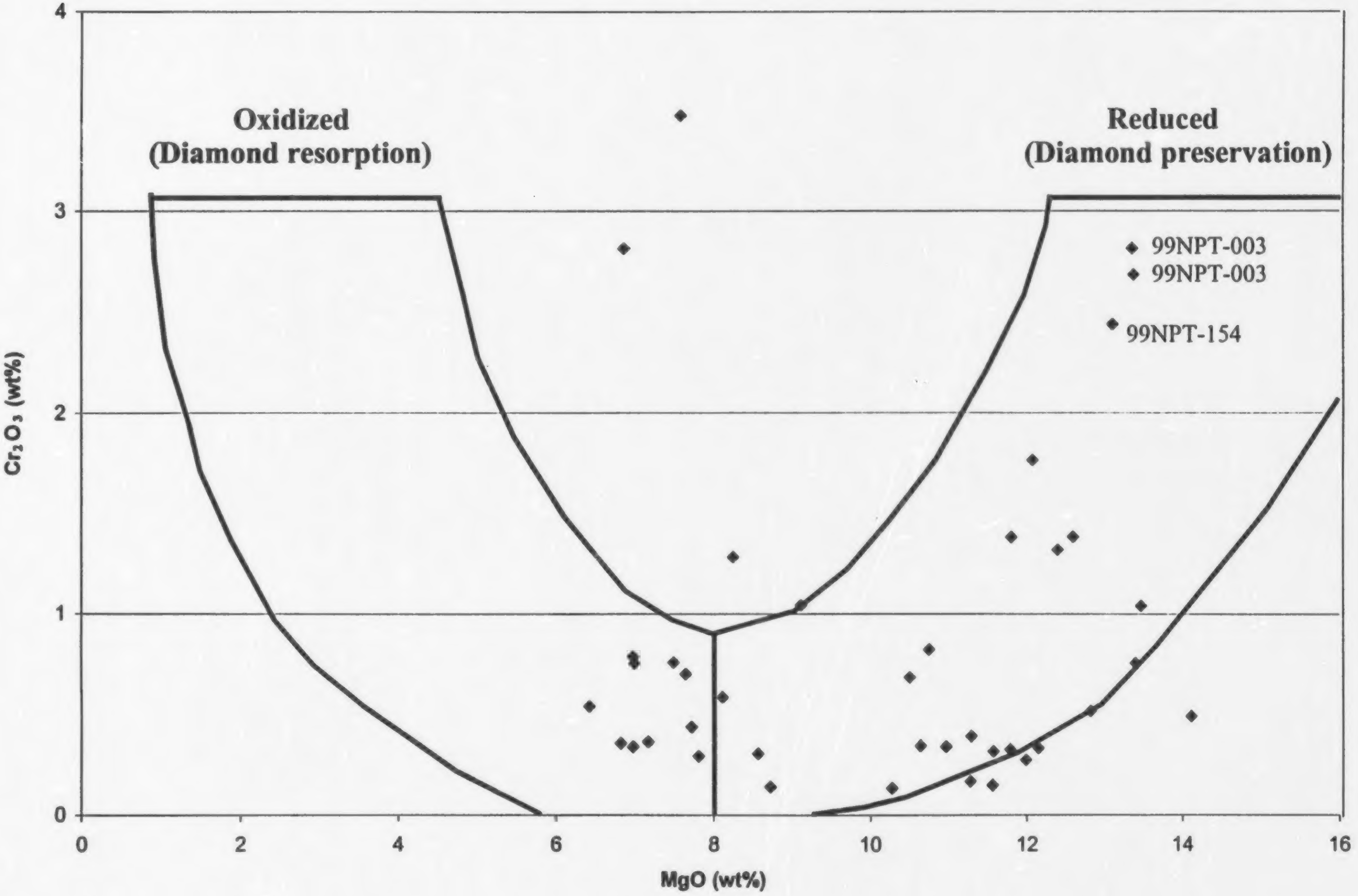


Figure 8: Mg-ilmenite Cr_2O_3-MgO plot (after Gurney and Moore 1991)

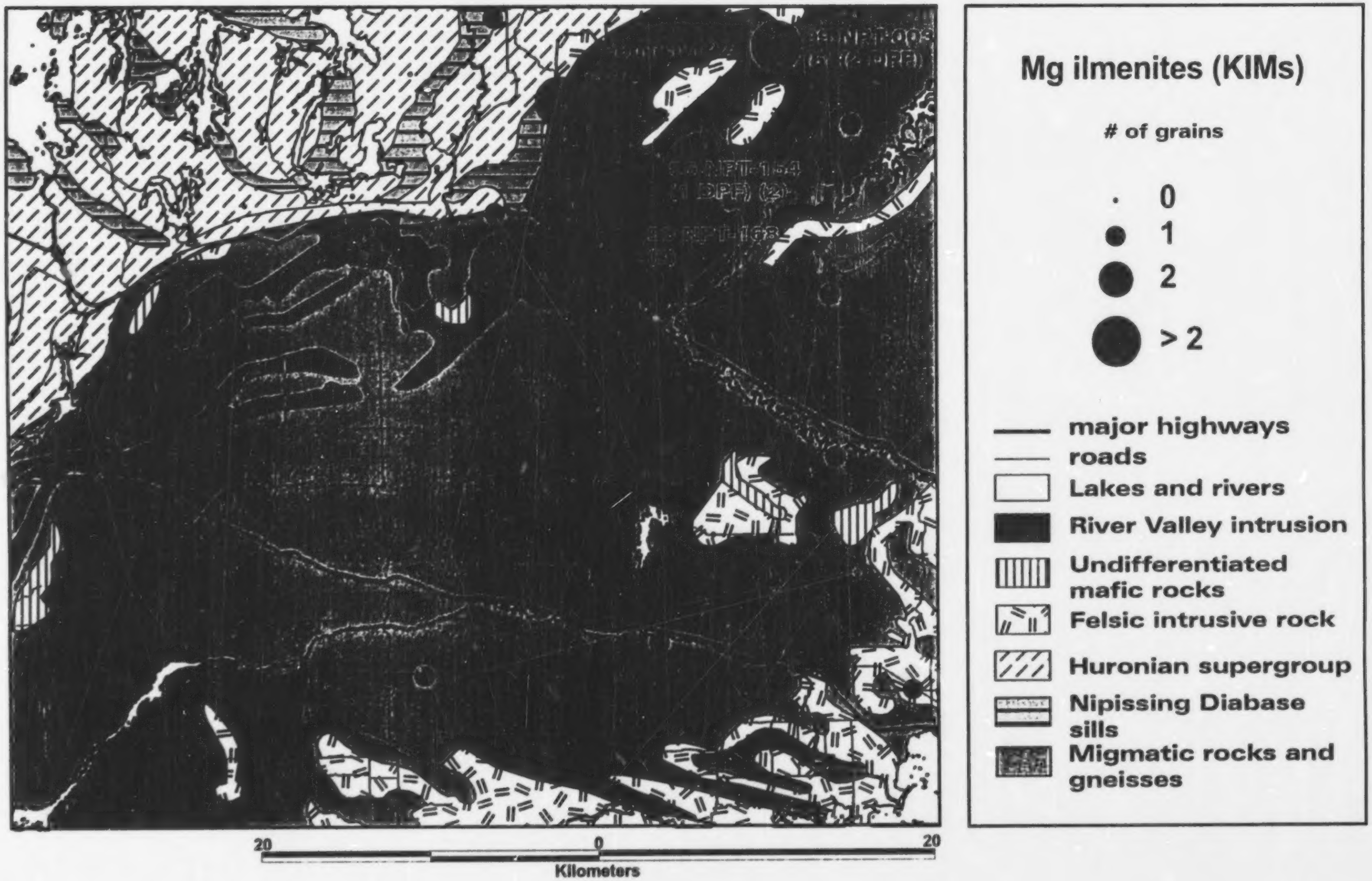

NPT-154
(1 DPF) (2)
NPT-168
Mg ilmenites (KIMs)
# of grains
0
1
2
> 2
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses
20
0
20
Kilometers

Figure 9: Regional distribution of kimberlite indicator Mg ilmenite grains.. Numbers in brackets represent total number ofkimberlite indicator Mg ilmenites. DPF = diamond preservation field.

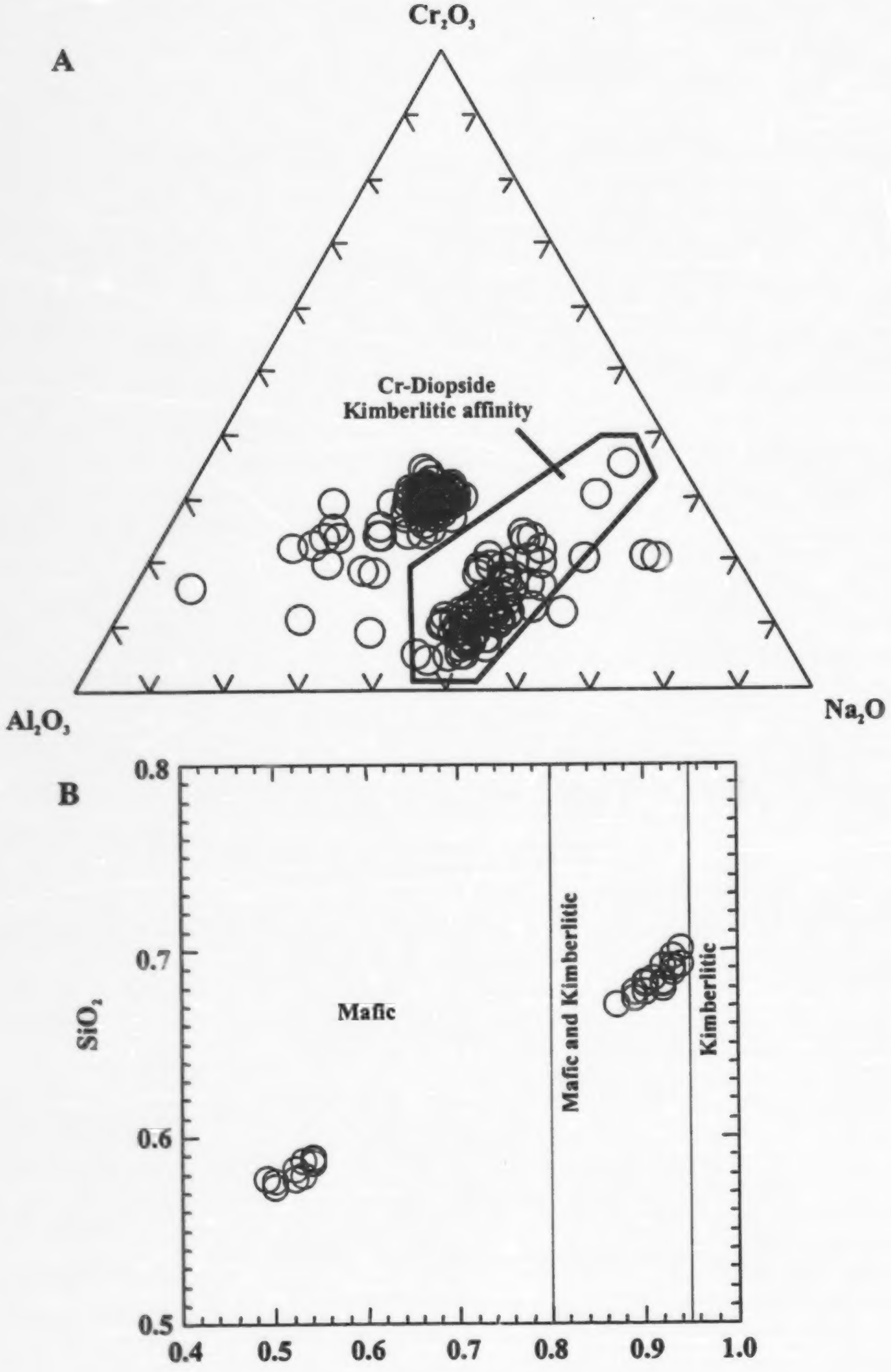


Figure 10: Cr-diopside ternary plot and olivine plot. A)Cr_2O_3, Al_2O_3 and Na_2O wt% ternary plot for pyroxenes. B)SiO_2 vs. Mg/FeMg (Forsterite) wt% plot for olivines. (After Morris et al. 2000)

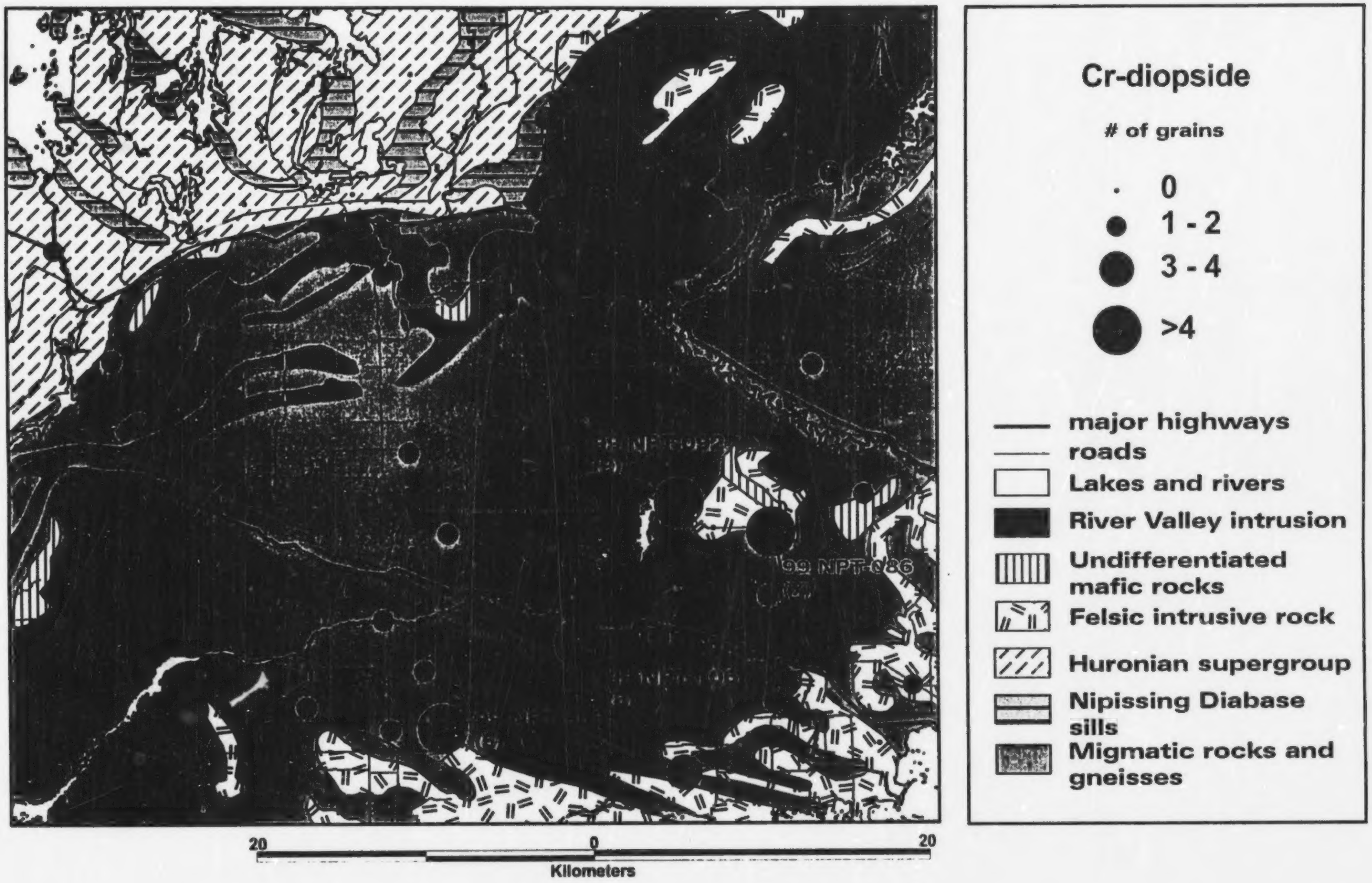

Cr-diopside
# of grains
0
1 - 2
3 - 4
>4
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses
99 NPT-086
20
0
20
Kilometers

Figure 11: Regional distribution of kimberlite indicator Cr- diopside grains. Numbers in brackets represent total number of kimberlite indicator Cr-diopside grains.

numbers of the Cr-diopside grains that are associated with kimberlite to be located in the southern to southeastern corner of the study area (99-NPT-092, 99-NPT-058, 99-NPT-106, 99-NPT-086).

OLIVINE

Olivine grains recovered from kimberlite pipes in other parts of Ontario including the James Bay and Kirkland Lake areas, have Fo values (Fo=Mg/MgFe) greater than 80 (Sage 1996). In the present study, this value has been used as a cut off for possible kimberlitic olivines. A total of 11 olivine grains plot in the >80 Fo, mafic and kimberlitic overlap field in the SiO_2 vs. Fo (Mg/FeMg) diagram of Morris et al. (2000) (Figure 10b). These grains have been included in the KIM data set (Appendix II).

Forsteritic olivine grains are distributed within the northeastern and eastern parts of the study area (Figure 12). One sample (99-NPT-022) contains 3 grains (Fo>80) and is located in the southeastern quadrant. Olivine grains from mafic sources (Fo<80) also plot in the far northeastern part of the study area and may be related to the mafic rocks of the River Valley intrusion (Fo=70 to 80) or to the extensive diabase sheets (Fo= 50 to 80) of the River Valley region.

PROXIMITY TO SOURCE

Of relevance to the present study is the question of whether the components of sampled till has been derived from a proximal source. Pebble lithologies from collected samples were examined and showed a general correlation with regional bedrock lithologies indicating the likelihood of local sources.

Till samples collected near bedrock surfaces often contain pebble lithologies that reflect the underlying bedrock and therefore are likely to represent proximal sources. Till samples collected some height above the bedrock surface may contain many exotic clasts, indicating a significant distance of transport. Other characteristics of pebbles such as size and shape in addition to percentage of local pebbles present in a sample can also be used to determine proximity to source.

Pebble lithologies from each sample can be used to estimate proximity to source. To determine till provenance an average of 100 pebbles were collected at each sample location and identified. In general, clasts were composed of local lithologies: metasediments; felsic intrusives; metamorphic/mafic intrusives; metamorphic/mafic metavolcanics; schists; and gneisses. Recurring rock types within these categories include: Huronian sediments; granite; gabbro; diabase; greenstone; pyroxenite; peridotite; and gneisses. Pebbles were often striated and faceted indicating subglacial deposition. Some striated clasts and boulders could be observed *in-situ* within till sections. These clasts and boulders clearly indicated ice flow toward the south-southwest.

All samples in this study with significant KIMs contain large amounts of pebbles that correspond with rock types observed within the study area. For example, the sites

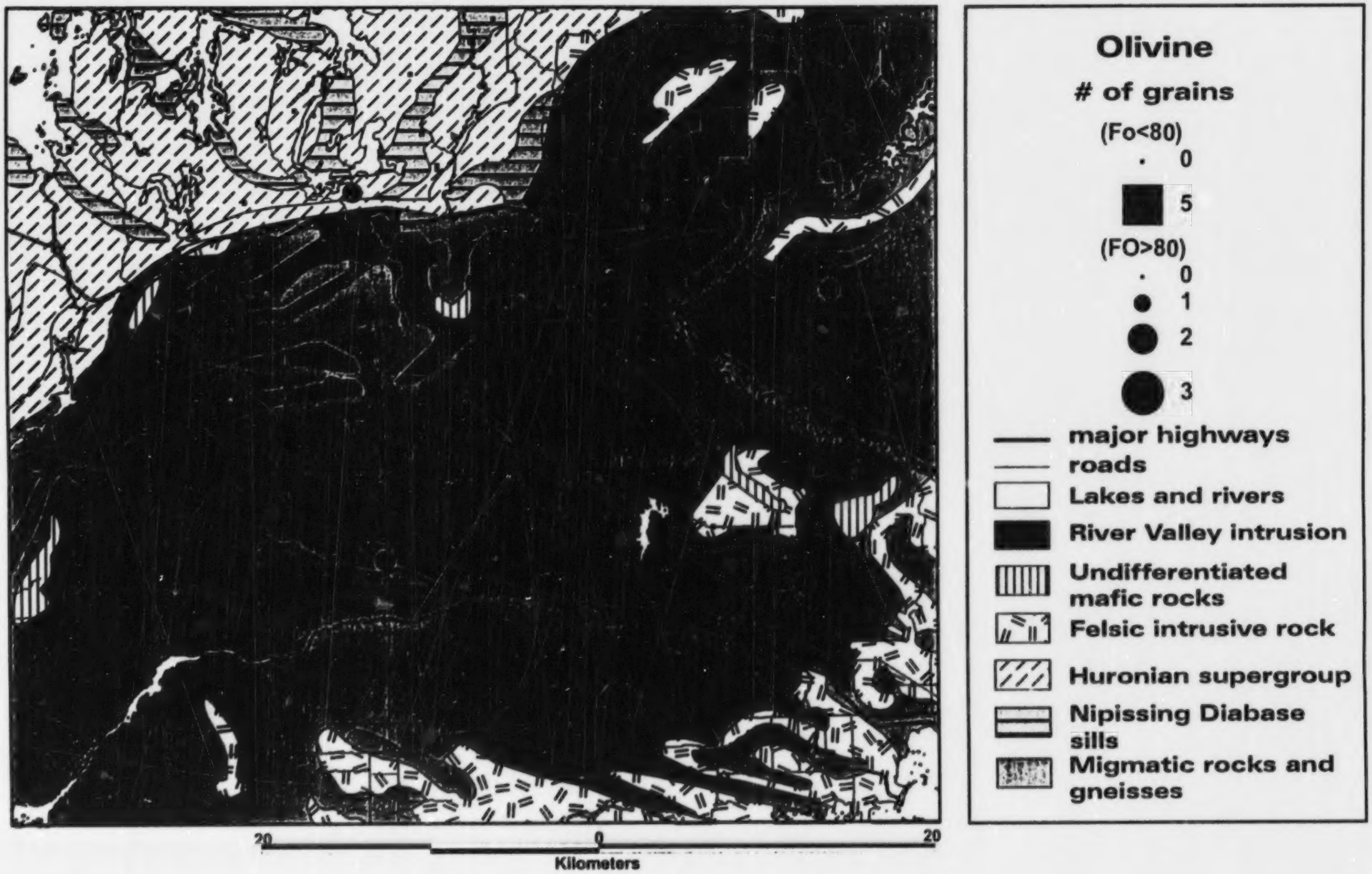

Olivine
# of grains
(Fo<80)
0
5
(FO>80)
0
1
2
3
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses
20
0
20
Kilometers

Figure 12: Regional distribution of olivine grains.

where the “G10” Cr-pyrope garnets were recovered have relatively low percentages of exotic pebbles suggesting close proximity to source.

Close proximity to source is also suggested by the presence of Cr-diopside and olivine, since these minerals break down easily in surface environments (Stephenson et al. 1999). Pebble lithologies for each sample are recorded in Tardif (2000b, Appendix E).

Recommendations for Kimberlite Exploration

Examination of the composition and distribution of kimberlite indicator minerals in the River Valley-Verner area has identified areas favourable for kimberlite exploration. The exploration targets within the study area (Figure 13) are based on sample sites containing significant KIMs such as “G10” garnets, “G9” garnets, Mg-ilmenites, Cr-diopsides and chromites unique to lamproites and kimberlites as well as grains that display diamond inclusion field compositions (Table 1). Exploration targets are widespread within the eastern part of the study area, however, there is a concentration in the northeastern quadrant. The number of KIMs recovered in the samples, generally 10 or less, suggests that the source(s) are up ice from the sample site. (Averill 1999).

Acknowledgements

The authors gratefully acknowledge Rachelle Lalonde for excellent field assistance. Julie Tremblay drafted figures. Tom Morris provided invaluable assistance in interpreting the data. Ross Kelly and Cam Baker provided excellent reviews of the report. Overburden Drilling Management performed the heavy mineral processing and Sandra Pitre performed picking and mounting of grains at the Geoscience Laboratories.

Sample	KIM grains recovered	Total KIM grains
99NPT-003	3 G9, 1 MEG, 1 Cr, 5 Im	10
99NPT-012	1 G10, 3 G9, 1 MEG, 2 Cr, 1 IfCr, 1 Im, 1 Ol	10
99NPT-022	3 Ol, 1 MEG, 4 Cr, 1DC	9
99NPT-029	1 G10, 1 KimCr, 4 Cr, 1 Im	7
99NPT-031	1G10, 2 G9, 1 MEG, 2 Cr, 3 Im, 1 DC	10
99NPT-074	4 G9, 1 IfCr, 32 Cr, 1 Im	38
99NPT-076	9 Cr, 1 DC	10
99NPT-086	7 DC, 1 G9	8
99NPT-091	1 G10	1
99NPT-092	3 G9, 9 DC	12
99NPT-105	1 G10, 1 G9, 4 DC	6
99NPT-106	1 Im, 8 DC	9
99NPT-127	1 G9, 1 Ec2, 12 Cr, 3 Im, 1 DC	18
99NPT-132	2 G9, 1 KimCr, 7 Cr, 1 Im	11
99NPT-135	1G10, 4Cr	5
99NPT-140	1 IfCr, 2 Im, 1 DC	4
99NPT-154	2 Im, 2 G9	4
99NPT-166	3 G9, 1MEG, 2 Cr	6
99NPT-171	1 G9, 2 MEG, 1 Im, 5 Cr	9

G9/G10 = Cr-pyrope garnet
Ec2 = Eclogitic garnet
MEG = Megacrystic garnet
Cr = Chromite
IfCr = Inclusion field Chromite
KimCr = Kimberlitic Chromite
DC = Cr-diopside
Im = Mg-ilmenite
DpfIm = Diamond preservation field (>2 wt% Cr_2O_3) ilmenite
Ol = olivine (Fo > 80)

Table 1: Summary table of samples containing significant numbers of KIMs. Results can be used to target exploration in the study area.

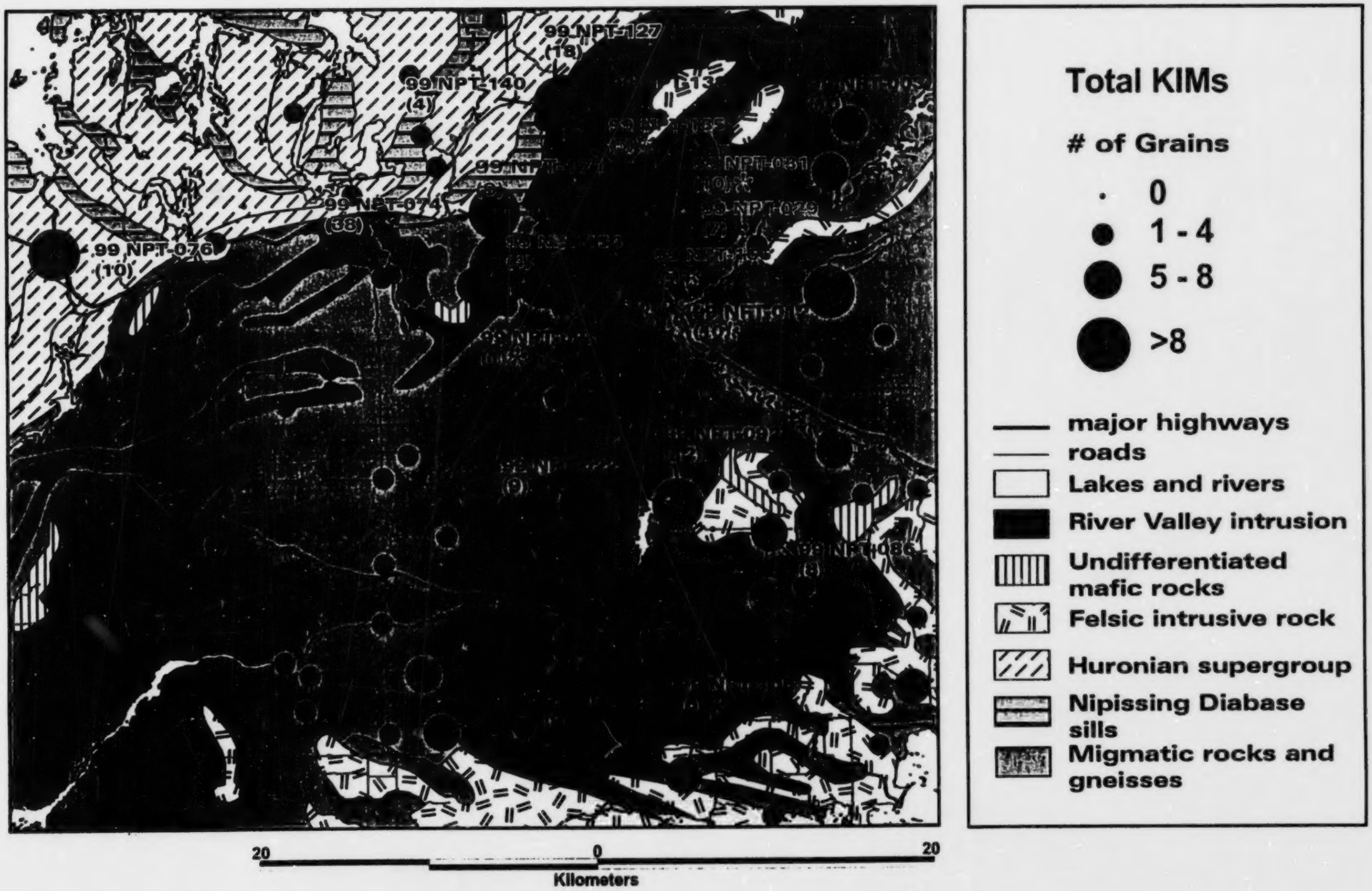

99 NPT-127
(18)
99 NPT-140
(4)
99 NPT-074
(38)
99 NPT-076
(10)
99 NPT-029
(7)
99 NPT-086
(8)
Total KIMs
# of Grains
0
1 - 4
5 - 8
>8
major highways
roads
Lakes and rivers
River Valley intrusion
Undifferentiated mafic rocks
Felsic intrusive rock
Huronian supergroup
Nipissing Diabase sills
Migmatic rocks and gneisses
20
0
20
Kilometers

Figure 13: Regional distribution of all kimberlite indicator minerals. Numbers in brackets represent total number of grains. Stars indicate the presence of "G10" garnet.

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Appendix I: Sample locations by UTM coordinates

Sample #		UTM East	UTM North
99-NPT-00	1	559153	5148532
99-NPT-00	2	568675	5173089
99-NPT-00	3	567936	5175486
99-NPT-00	4	571909	5165788
99-NPT-00	5	566856	5163945
99-NPT-00	6	565688	5174038
99-NPT-00	7	567609	5170798
99-NPT-00	8	564870	5170438
99-NPT-00	9	567573	5166416
99-NPT-0	10	572361	5170942
99-NPT-0	11	568588	5161403
99-NPT-0	12	571088	5161218
99-NPT-0	13	556121	5145058
99-NPT-0	14	559333	5144697
99-NPT-0	15	561788	5145599
99-NPT-0	16	574360	5158673
99-NPT-0	17	570923	5155385
99-NPT-0	18	570023	5156922
99-NPT-0	19	564197	5161259
99-NPT-0	20	566890	5153584
99-NPT-0	21	566561	5157861
99-NPT-0	22	556540	5148874
99-NPT-0	23	556087	5152349
99-NPT-0	24	575904	5138083
99-NPT-0	25	576198	5142170
99-NPT-0	26	576646	5146045
99-NPT-0	27	576303	5149642
99-NPT-0	28	573470	5166006
99-NPT-0	29	560716	5166473
99-NPT-0	30	560199	5168738
99-NPT-0	31	559149	5167226
99-NPT-0	32	559643	5162827
99-NPT-0	33	556202	5165233
99-NPT-0	34	554555	5166537
99-NPT-0	35	554303	5171285
99-NPT-0	36	559349	5174826
99-NPT-0	37	571148	5169155
99-NPT-0	38	556258	5145243
99-NPT-0	39	562026	5160222
99-NPT-0	40	555316	5160349
99-NPT-0	42	544723	5145421
99-NPT-0	41	544596	5141992
99-NPT-0	43	544656	5150443
99-NPT-0	44	544371	5159176
99-NPT-0	45	544658	5162158
99-NPT-0	46	527682	5167514
99-NPT-0	47	528318	5169391
99-NPT-0	48	529943	5172350
99-NPT-0	49	544129	5164467
99-NPT-0	50	534579	5169009
99-NPT-0	51	532936	5170349

Sample #		UTM East	UTM North
99-NPT-0	52	535818	5171360
99-NPT-0	53	539526	5171782
99-NPT-0	54	539007	5167919
99-NPT-0	55	543299	5170296
99-NPT-0	56	542934	5166938
99-NPT-0	57	544468	5165980
99-NPT-0	58	548045	5135511
99-NPT-0	59	552901	5135793
99-NPT-0	60	549741	5138298
99-NPT-0	61	546996	5138978
99-NPT-0	62	552383	5139026
99-NPT-0	63	552652	5141185
99-NPT-0	64	550235	5142150
99-NPT-0	65	551137	5149026
99-NPT-0	66	553264	5145298
99-NPT-0	67	554313	5147669
99-NPT-0	68	552627	5152781
99-NPT-0	69	548437	5147052
99-NPT-0	70	546162	5151802
99-NPT-0	71	550173	5161652
99-NPT-0	72	552077	5160514
99-NPT-0	73	551911	5158136
99-NPT-0	74	551319	5165914
99-NPT-0	75	551216	5177138
99-NPT-0	76	525436	5163611
99-NPT-0	77	536586	5166372
99-NPT-0	78	534946	5164258
99-NPT-0	79	547924	5168334
99-NPT-0	80	547924	5168564
99-NPT-0	81	547016	5170432
99-NPT-0	82	546343	5173927
99-NPT-0	83	567646	5137127
99-NPT-0	84	563979	5130152
99-NPT-0	85	567331	5143375
99-NPT-0	86	567498	5147133
99-NPT-0	87	568039	5150127
99-NPT-0	88	571345	5151947
99-NPT-0	89	561889	5156650
99-NPT-0	90	554882	5155126
99-NPT-0	91	555923	5156952
99-NPT-0	92	562046	5148839
99-NPT-0	93	564110	5147421
99-NPT-0	94	567796	5152392
99-NPT-0	95	569470	5143993
99-NPT-0	96	573014	5149366
99-NPT-0	97	572603	5145113
99-NPT-0	98	570225	5139991
99-NPT-0	99	560082	5137699
99-NPT-	100	565019	5135922
99-NPT-	101	573880	5134658
99-NPT-	102	567529	5130529

Sample #		UTM East	UTM North
99-NPT-	103	557348	5134208
99-NPT-	104	564218	5139461
99-NPT-	105	562297	5132919
99-NPT-	106	556160	5140595
99-NPT-	107	560887	5140934
99-NPT-	108	561269	5142641
99-NPT-	109	543465	5162621
99-NPT-	110	541584	5156868
99-NPT-	111	538962	5154743
99-NPT-	112	535995	5154996
99-NPT-	113	534803	5157133
99-NPT-	114	536068	5160746
99-NPT-	115	528775	5157145
99-NPT-	116	541945	5150289
99-NPT-	117	541124	5142185
99-NPT-	118	538842	5139706
99-NPT-	119	534791	5146638
99-NPT-	120	532773	5140734
99-NPT-	121	535181	5149535
99-NPT-	122	540317	5138927
99-NPT-	123	540029	5136816
99-NPT-	124	544965	5135462
99-NPT-	125	536752	5133978
99-NPT-	126	533263	5136681
99-NPT-	127	555164	5172275
99-NPT-	128	555517	5172496
99-NPT-	129	555465	5172498
99-NPT-	130	555421	5172497
99-NPT-	131	555326	5172455
99-NPT-	132	555423	5172401
99-NPT-	133	555413	5172344
99-NPT-	134	555411	5172304
99-NPT-	135	555316	5172360
99-NPT-	136	555327	5172404
99-NPT-	137	555325	5172493
99-NPT-	138	555320	5172345
99-NPT-	139	555428	5172264
99-NPT-	140	555321	5172264
99-NPT-	141	555420	5172218
99-NPT-	142	555321	5172216
99-NPT-	143	555419	5172173
99-NPT-	144	555324	5172175
99-NPT-	145	555391	5172074
99-NPT-	146	555377	5172124
99-NPT-	147	555322	5172125
99-NPT-	148	555414	5172025
99-NPT-	149	555404	5171850
99-NPT-	150	555323	5172305
99-NPT-	151	555358	5172582
99-NPT-	152	555325	5172544
99-NPT-	153	555423	5172452
99-NPT-	154	559178	5167241
99-NPT-	155	555321	5171833
99-NPT-	156	555326	5171777
99-NPT-	157	555422	5171782
99-NPT-	158	555323	5171674
99-NPT-	159	555421	5171676
99-NPT-	160	555421	5171471
99-NPT-	161	555016	5172639
99-NPT-	162	555263	5172302
99-NPT-	163	535081	5145252
99-NPT-	164	530886	5138393
99-NPT-	165	530643	5142079
99-NPT-	166	559156	5167320
99-NPT-	167	559153	5167274
99-NPT-	168	559141	5167181
99-NPT-	169	559134	5167121
99-NPT-	170	559125	5167067
99-NPT-	171	559119	5167018
99-NPT-	172	559113	5166965

Appendix II: Kimberlite indicator minerals in 127 samples from the River Valley-Verner area

Abbreviations

G9/G10 = Cr-pyrope garnets
DIF = Diamond Inclusion Field (including diamond intergrowth field)
L/K = Lamproitic and Kimberlitic field
OF = Overlap Field (including grains in non-lamproitic/kimberlititc field)
KIM = Kimberlite Indicator Mineral
N-KIM = Non-Kimberlite Indicator Mineral
FO = Forsterite

Sample	UTM	UTM	Garnets					Chromite			Mg-ilmenite		Cr-diopside		Olivine		Others	Total	Total
	East	North	(G9)	(G10)	Megacrysts	Eclogitic	Crustal	DIF	L/K	OF	KIM	N-KIM	KIM	N-KIM	FO>80	FO<80		KIM grains	grains
99NPT-001	559153	5148532	0	0	0	0	2	0	0	1	1	1	1	0	0	0	0	3	6
99NPT-003	567936	5175486	3	0	1	0	0	0	0	1	5	1	0	0	0	5	0	10	16
99NPT-005	566856	5163945	0	0	0	0	2	0	0	1	0	1	0	1	0	0	0	1	5
99NPT-008	564870	5170438	1	0	0	0	0	0	0	2	0	0	0	1	0	5	0	3	9
99NPT-010	572361	5170942	1	0	0	0	1	0	0	4	1	0	0	2	0	0	0	6	9
99NPT-012	571088	5161218	3	1	1	0	0	1	0	2	1	0	0	0	1	0	0	10	10
99NPT-013	556121	5145058	1	0	0	0	1	0	0	6	1	2	0	0	0	0	0	8	11
99NPT-014	559333	5144697	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
99NPT-016	574360	5158673	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	4
99NPT-017	570923	5155385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-018	570023	5156922	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	2	3
99NPT-022	556540	5148874	0	0	1	0	0	0	0	4	0	0	1	0	3	0	0	9	9
99NPT-023	556087	5152349	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
99NPT-024	575904	5138083	3	0	0	0	0	0	0	0	1	0	1	1	0	0	0	5	6
99NPT-025	576198	5142170	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
99NPT-027	576303	5149642	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	3
99NPT-029	560716	5166473	0	1	0	0	0	0	1	4	1	3	0	0	0	0	0	7	10
99NPT-030	560199	5168738	0	0	0	0	0	0	1	1	0	0	0	3	0	0	0	2	5
99NPT-031	559149	5167226	2	1	1	0	0	0	0	2	3	1	1	3	0	0	0	10	14
99NPT-032	559643	5162827	0	0	1	0	0	0	0	1	1	3	0	3	1	0	0	4	10
99NPT-033	556202	5165233	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
99NPT-034	554555	5166537	1	0	0	0	4	0	0	0	0	0	0	11	0	0	0	1	16
99NPT-035	554303	5171285	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	2	3
99NPT-036	559349	5174826	1	0	0	0	0	0	0	4	0	0	0	1	0	0	0	5	6
99NPT-037	571148	5168155	1	0	0	0	0	0	0	1	1	1	1	0	1	0	0	5	6
99NPT-038	556258	5145243	1	0	1	0	0	0	0	2	0	3	4	0	0	0	0	8	11
99NPT-040	555316	5160349	1	0	0	0	0	0	0	2	0	0	0	4	0	0	0	3	7

Sample	UTM	UTM	Garnets					Chromite			Mg-ilmenite		Cr-diopside		Olivine		Others	Total	Total
	East	North	(G9)	(G10)	Megacrysts	Eclogitic	Crustal	DIF	L/K	OF	KIM	N-KIM	KIM	N-KIM	FO>80	FO<80		KIM grains	grains
99NPT-041	544596	5141992	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	4
99NPT-042	544723	5145421	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2
99NPT-043	544656	5150443	0	0	1	0	0	0	0	0	0	1	0	3	0	0	0	1	5
99NPT-044	544371	5159176	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
99NPT-045	544658	5162158	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	3
99NPT-048	529943	5172350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-049	544129	5164467	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
99NPT-053	539526	5171782	1	0	1	0	0	0	0	0	0	0	0	5	0	0	0	2	7
99NPT-056	542934	5166938	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	3
99NPT-057	544468	5165980	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	3
99NPT-058	548045	5135511	1	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6	7
99NPT-059	552901	5135793	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	3
99NPT-061	546996	5138978	1	0	0	0	0	0	0	3	1	0	2	0	0	0	0	7	7
99NPT-069	548437	5147052	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	2	3
99NPT-070	546162	5151802	2	0	0	0	0	0	1	0	0	0	1	2	0	0	0	4	6
99NPT-071	550173	5161652	1	0	0	0	2	0	0	4	1	0	0	1	1	0	0	7	10
99NPT-072	552077	5160514	0	0	0	0	5	0	0	0	0	0	2	1	0	0	0	2	8
99NPT-073	551911	5158136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-074	551319	5165914	4	0	0	0	0	1	0	32	1	10	0	0	0	0	0	38	48
99NPT-075	551216	5177138	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	3
99NPT-076	525436	5163611	0	0	0	0	0	0	0	9	0	0	1	1	0	0	2	10	13
99NPT-077	536586	5166372	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
99NPT-078	534946	5164258	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	2	4
99NPT-079	547924	5168334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-080	547924	5168564	2	0	0	1	0	0	0	0	0	0	0	5	0	0	0	3	8
99NPT-081	547016	5170432	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
99NPT-082	546343	5173927	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	5

Sample	UTM	UTM	Garnets					Chromite			Mg-ilmenite		Cr-diopside		Olivine		Others	Total	Total
	East	North	(G9)	(G10)	Megacrysts	Eclogitic	Crustal	DIF	L/K	OF	KIM	N-KIM	KIM	N-KIM	FO>80	FO<80		KIM grains	grains
99NPT-083	567646	5137127	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
99NPT-084	563979	5130152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-085	567331	5143375	2	0	0	0	2	0	0	4	0	0	1	1	1	0	0	8	11
99NPT-086	567498	5147133	1	0	0	0	0	0	0	0	0	0	7	0	0	0	0	8	8
99NPT-087	568039	5150127	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
99NPT-088	571345	5151947	4	0	1	0	0	0	0	0	1	0	0	0	0	0	0	6	6
99NPT-089	561889	5156650	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
99NPT-090	554882	5155126	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
99NPT-091	555923	5156952	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
99NPT-092	562046	5148839	3	0	0	0	0	0	0	0	0	0	9	2	0	0	0	12	14
99NPT-093	564110	5147421	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-095	569470	5143993	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	4	4
99NPT-096	573014	5149366	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	2
99NPT-097	572603	5145113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-098	570225	5139991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-101	573880	5134658	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3	3
99NPT-102	567529	5130529	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
99NPT-103	557348	5134208	1	0	1	0	1	0	0	1	1	2	0	0	0	0	0	4	7
99NPT-104	564218	5139461	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	2
99NPT-105	562297	5132919	1	1	0	0	0	0	0	0	0	0	4	0	0	0	0	6	6
99NPT-106	556160	5140595	0	0	0	0	0	0	0	0	1	0	8	1	0	0	0	9	10
99NPT-107	560887	5140934	1	0	1	0	3	0	0	1	1	1	2	0	0	0	0	6	10
99NPT-108	561269	5142641	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	3
99NPT-109	543465	5162621	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
99NPT-110	541584	5156868	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
99NPT-111	538962	5154743	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
99NPT-112	535995	5154996	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	2	4

Sample	UTM	UTM	Garnets					Chromite			Mg-ilmenite		Cr-diopside		Olivine		Others	Total	Total
	East	North	(G9)	(G10)	Megacrysts	Eclogitic	Crustal	DIF	L/K	OF	KIM	N-KIM	KIM	N-KIM	FO>80	FO<80		KIM grains	grains
99NPT-113	534803	5157133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99-NPT-114	536068	5160746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-115	528775	5157145	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
99NPT-117	541124	5142185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-118	538842	5139706	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	3
99NPT-119	534791	5146638	2	0	0	0	2	0	0	0	0	0	0	0	0	0	1	2	5
99NPT-120	532773	5140734	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	3
99NPT-121	535181	5149535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-122	540317	5138927	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	2
99NPT-123	540029	5136816	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
99NPT-124	544965	5135462	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	2
99NPT-125	536752	5133978	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
99NPT-126	533263	5136681	0	0	0	0	2	0	0	0	0	0	4	2	0	0	0	4	8
99NPT-127	555164	5172275	1	0	0	1	0	0	0	12	3	18	1	3	0	0	0	18	39
99NPT-128	555517	5172496	3	0	1	0	0	0	0	1	0	0	1	6	0	0	0	6	12
99NPT-129	555465	5172498	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4
99NPT-130	555421	5172497	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	2
99NPT-131	555326	5172455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-132	555423	5172401	2	0	0	0	0	0	1	7	1	7	0	0	0	0	0	11	18
99NPT-133	555413	5172344	2	0	1	0	0	0	0	3	0	9	0	1	0	0	0	6	16
99NPT-134	555411	5172304	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	1	4
99NPT-135	555316	5172360	0	1	0	0	0	0	0	4	0	4	0	2	0	0	0	5	11
99NPT-136	555327	5172404	0	0	0	0	0	0	0	2	1	9	0	0	1	0	0	4	13
99NPT-138	555320	5172345	0	0	0	0	1	0	0	0	0	2	0	1	2	0	0	2	6
99NPT-139	555428	5172264	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	2
99NPT-140	555321	5172264	0	0	0	0	0	1	0	0	2	3	1	1	0	0	0	4	8
99NPT-141	555420	5172218	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2

Sample	UTM	UTM	Garnets					Chromite			Mg-ilmenite		Cr-diopside		Olivine		Others	Total	Total
	East	North	(G9)	(G10)	Megacrysts	Eclogitic	Crustal	DIF	L/K	OF	KIM	N-KIM	KIM	N-KIM	FO>80	FO<80		KIM grains	grains
99NPT-145	555391	5172074	1	0	1	0	0	0	0	1	0	0	1	1	0	0	0	4	5
99NPT-147	555322	5172125	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0	3	4
99NPT-150	555323	5172305	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	2	4
99NPT-151	555358	5172582	1	0	0	0	0	0	0	4	1	1	0	0	0	0	0	6	7
99NPT-154	559178	5167241	2	0	0	0	0	0	0	0	2	2	0	0	0	0	0	4	6
99NPT-155	555321	5171833	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	3
99NPT-156	555326	5171777	1	0	0	0	0	0	0	2	1	0	0	2	0	0	0	4	6
99NPT-161	555016	5172639	0	0	0	0	0	0	0	5	0	3	0	0	0	0	0	5	8
99NPT-162	555263	5172302	2	0	0	0	0	0	0	3	0	0	0	0	0	0	0	5	5
99NPT-163	535081	5145252	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
99NPT-164	530886	5138393	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
99NPT-165	530643	5142079	1	0	1	0	0	0	0	6	0	3	0	0	0	0	0	8	11
99NPT-166	559156	5167320	3	0	1	0	1	0	0	2	0	1	0	1	0	0	0	6	9
99NPT-167	559153	5167274	2	0	1	0	1	0	0	2	1	1	0	0	0	0	0	6	8
99NPT-168	559141	5167181	0	0	1	0	0	0	0	1	3	0	1	0	0	0	0	6	6
99NPT-169	559134	5167121	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
99NPT-170	559125	5167067	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99NPT-171	559119	5167018	1	0	2	0	0	0	0	5	1	1	0	2	0	0	0	9	12
99NPT-172	559113	5166965	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
		Total	92	6	21	3	35	3	5	175	41	104	78	106	18	10	9	442	706

Appendix III: Weight percent geochemistry for KIM grains: Garnet, Chromite, Mg-Ilmenite, Cr-Diopside (pyroxene), Olivine, Others

Garnets

Garnet from Peridotite (KIM): Harzburgitic Cr-Pyrope (G10)

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-012-01	41.290	0.018	18.801	6.427	20.277	4.980	0.456	6.980	0.000	0.000	99.229
99NPT-029-01	41.690	0.025	20.497	4.246	20.887	4.357	0.459	7.528	0.021	0.000	99.710
99NPT-031-GP-2	40.894	0.578	16.959	7.946	19.934	5.443	0.332	7.366	0.057	0.000	99.509
99NPT-091-GP-1	41.827	0.005	20.114	5.277	21.310	3.491	0.496	7.184	0.000	0.000	99.704
99NPT-105-GP-1	41.876	0.018	20.017	5.329	21.547	3.628	0.424	6.932	0.032	0.004	99.807
99NPT-135-01	41.616	0.115	20.342	4.324	20.686	2.751	0.293	9.843	0.023	0.000	99.993

Garnet from Peridotite (KIM): Lherzolitic Cr-Pyrope (G9)

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-003-GP-1	41.579	0.063	19.164	5.400	20.233	5.898	0.321	6.933	0.008	0.004	99.603
99NPT-003-GP-2	41.604	0.332	19.686	5.047	20.483	4.953	0.364	7.166	0.036	0.004	99.675
99NPT-003-GP-3	41.169	0.191	19.026	6.340	19.457	5.650	0.513	7.585	0.044	0.004	99.979
99NPT-008-01	41.335	0.031	21.142	3.451	19.809	5.074	0.509	7.763	0.018	0.000	99.132
99NPT-010-02	41.881	0.236	20.248	4.308	21.292	4.691	0.344	6.666	0.040	0.000	99.706
99NPT-012-02	41.700	0.317	20.196	4.628	21.148	4.761	0.329	6.725	0.040	0.000	99.844
99NPT-012-04	41.628	0.063	20.399	4.749	20.600	4.784	0.444	7.120	0.022	0.002	99.811
99NPT-012-05	41.664	0.420	18.889	5.894	20.343	5.560	0.310	6.782	0.049	0.001	99.912
99NPT-013-11	41.942	0.307	21.104	2.993	20.427	4.585	0.346	7.656	0.042	0.000	99.402
99NPT-016-04	41.554	0.000	19.987	5.154	20.010	5.380	0.491	7.193	0.015	0.000	99.784
99NPT-024-GP-1	41.803	0.029	20.766	4.119	20.511	4.844	0.460	7.186	0.017	0.000	99.735
99NPT-024-GP-2	41.578	0.115	20.093	5.014	20.503	5.003	0.437	6.908	0.038	0.000	99.689
99NPT-024-GP-3	41.361	0.605	18.047	6.104	19.579	5.975	0.370	7.316	0.056	0.001	99.414
99NPT-025-01	41.750	0.031	21.127	3.402	20.092	4.952	0.450	7.970	0.021	0.003	99.798
99NPT-025-02	41.642	0.006	21.305	3.152	19.286	5.407	0.572	8.613	0.003	0.000	99.986
99NPT-027-01	41.105	0.310	20.238	3.982	19.434	4.785	0.462	9.296	0.039	0.000	99.651
99NPT-031-GP-1	42.033	0.350	20.699	3.555	21.385	4.875	0.297	6.694	0.053	0.009	99.950
99NPT-031-GP-1	42.007	0.129	21.367	2.752	21.164	4.537	0.353	7.389	0.018	0.004	99.720
99NPT-031-GP-3	41.303	0.177	19.114	5.955	19.469	5.574	0.464	7.907	0.032	0.000	99.995
99NPT-034-GP-1	40.569	0.200	20.568	2.959	15.943	5.758	0.613	13.470	0.002	0.000	100.082
99NPT-036-GP-1	42.013	0.050	20.815	3.914	20.125	5.098	0.504	7.612	0.017	0.001	100.149
99NPT-037-01	42.090	0.000	21.830	2.981	20.740	4.851	0.390	7.253	0.016	0.000	100.151
99NPT-038-02	41.657	0.017	19.781	5.154	19.718	5.696	0.470	7.488	0.013	0.000	99.994
99NPT-040-01	41.367	0.227	19.616	4.513	20.066	5.037	0.418	7.886	0.039	0.000	99.169
99NPT-041-01	41.886	0.015	20.835	4.048	20.646	4.600	0.487	7.453	0.004	0.002	99.976
99NPT-042-01	41.374	0.088	20.622	3.734	19.278	4.698	0.391	9.372	0.019	0.000	99.576
99NPT-045-GP-1	41.501	0.021	20.255	4.527	20.179	4.827	0.506	7.399	0.018	0.005	99.238
99NPT-053-GP-1	41.776	0.029	20.734	4.177	20.781	4.961	0.398	7.039	0.010	0.001	99.906
99NPT-056-01	41.783	0.042	21.012	3.226	19.336	4.790	0.465	9.391	0.008	0.000	100.053
99NPT-058-GP-1	41.564	0.101	20.733	3.736	20.431	5.136	0.356	7.773	0.010	0.009	99.849
99NPT-061-01	41.563	0.006	20.641	4.074	20.204	4.832	0.457	7.653	0.018	0.000	99.448
99NPT-070-GP-1	41.224	0.160	20.692	3.158	18.296	4.810	0.429	10.974	0.037	0.004	99.784
99NPT-070-GP-2	41.428	0.038	20.064	4.826	19.593	5.181	0.501	8.017	0.010	0.008	99.666
99NPT-071-01	41.875	0.108	21.860	2.281	19.735	4.662	0.469	9.047	0.038	0.001	100.076
99NPT-074-01	41.437	0.111	19.926	4.788	19.544	5.612	0.463	7.620	0.034	0.000	99.535
99NPT-074-02	41.896	0.005	21.130	3.526	20.161	5.087	0.511	7.420	0.011	0.000	99.747
99NPT-074-03	41.781	0.000	20.883	3.871	20.466	4.760	0.499	7.344	0.014	0.000	99.618
99NPT-074-04	41.532	0.000	20.643	3.952	19.746	5.194	0.568	7.677	0.019	0.000	99.331
99NPT-075-01	41.600	0.044	21.463	2.851	19.513	5.312	0.481	8.440	0.008	0.003	99.715
99NPT-080-GP-1	40.808	0.075	19.449	5.008	15.765	7.002	0.637	11.412	0.000	0.000	100.156

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-080-GP-2	41.884	0.088	20.719	4.025	19.630	5.325	0.490	7.917	0.025	0.004	100.107
99NPT-082-GP-1	41.066	0.170	17.727	7.784	19.182	6.071	0.429	7.029	0.030	0.005	99.493
99NPT-085-01	41.665	0.066	21.101	3.468	19.645	5.225	0.417	8.065	0.018	0.004	99.674
99NPT-085-02	40.865	0.325	17.460	7.751	19.388	5.854	0.387	7.664	0.052	0.000	99.746
99NPT-086-01	41.893	0.337	20.464	3.155	21.336	4.726	0.292	6.908	0.022	0.000	99.133
99NPT-087-01	41.227	0.577	18.259	6.422	20.355	5.492	0.330	6.860	0.034	0.000	99.556
99NPT-088-GO-1	41.995	0.524	21.857	0.603	19.485	4.436	0.365	10.855	0.061	0.005	100.186
99NPT-088-GP-1	41.793	0.559	20.280	2.991	20.679	5.227	0.280	7.625	0.037	0.000	99.471
99NPT-088-GP-2	41.677	0.089	20.426	4.087	20.225	5.060	0.441	7.944	0.032	0.000	99.981
99NPT-088-GP-3	41.708	0.105	20.931	3.824	19.868	5.036	0.479	7.879	0.030	0.009	99.869
99NPT-089-01	41.782	0.169	20.981	3.283	20.304	4.649	0.409	8.016	0.047	0.000	99.640
99NPT-092-GP-1	41.741	0.271	21.412	2.395	20.216	4.928	0.433	8.194	0.031	0.005	99.626
99NPT-092-GP-1	40.533	0.090	18.393	6.229	16.657	7.122	0.607	9.776	0.011	0.000	99.418
99NPT-092-GP-2	41.967	0.007	21.489	3.089	19.968	5.183	0.546	7.947	0.016	0.000	100.212
99NPT-092-GP-3	42.263	0.482	20.209	4.011	21.427	4.972	0.310	6.648	0.056	0.006	100.384
99NPT-095-GP-2	42.039	0.047	20.520	4.112	20.985	5.349	0.273	6.544	0.000	0.000	99.869
99NPT-102-01	40.558	0.491	17.204	7.324	18.399	6.197	0.433	8.604	0.034	0.005	99.249
99NPT-103-02	41.397	0.162	21.217	3.156	19.322	5.097	0.494	8.743	0.022	0.001	99.611
99NPT-104-01	41.407	0.054	20.317	4.898	19.517	5.204	0.515	7.826	0.021	0.000	99.759
99NPT-105-GP-2	41.698	0.038	19.486	5.842	20.420	5.313	0.446	6.797	0.008	0.000	100.048
99NPT-107-04	41.734	0.000	21.456	3.053	19.566	5.137	0.586	8.266	0.011	0.001	99.810
99NPT-108-01	41.703	0.010	21.135	3.230	19.881	4.839	0.591	8.632	0.011	0.000	100.032
99NPT-110-01	41.306	0.218	19.111	5.983	19.758	5.479	0.418	7.539	0.036	0.000	99.848
99NPT-112-GP-1	41.896	0.045	20.640	4.292	20.656	4.727	0.486	7.235	0.037	0.001	100.015
99NPT-118-01	40.725	0.099	20.239	4.141	16.786	6.138	0.621	11.107	0.009	0.000	99.865
99NPT-119-GP-1	41.939	0.017	20.984	3.934	20.525	4.502	0.514	7.499	0.015	0.000	99.929
99NPT-119-GP-2	41.512	0.147	19.733	5.452	19.566	5.890	0.495	7.387	0.026	0.000	100.208
99NPT-120-01	41.869	0.024	21.382	3.422	20.674	4.382	0.494	7.701	0.008	0.003	99.959
99NPT-124-01	41.400	0.075	21.236	2.988	19.202	4.947	0.548	9.267	0.013	0.002	99.678
99NPT-127-01	41.813	0.225	21.556	2.707	20.311	4.494	0.400	8.269	0.031	0.002	99.808
99NPT-128-GP-1	41.384	0.002	21.235	3.235	18.786	5.675	0.568	8.924	0.019	0.000	99.828
99NPT-128-GP-2	41.346	0.148	19.153	5.576	19.002	5.562	0.485	8.537	0.028	0.006	99.843
99NPT-128-GP-3	41.624	0.308	20.404	4.077	20.004	5.117	0.428	8.151	0.055	0.000	100.168
99NPT-129-GP-1	41.724	0.076	20.747	3.810	19.633	5.328	0.398	8.223	0.019	0.000	99.958
99NPT-132-01	41.115	0.042	20.479	4.077	18.207	4.746	0.499	11.010	0.000	0.003	100.178
99NPT-132-02	41.906	0.367	21.527	1.553	20.786	4.371	0.299	8.598	0.066	0.006	99.479
99NPT-133-01	41.506	0.044	20.421	4.536	19.754	5.467	0.512	7.692	0.019	0.003	99.954
99NPT-133-02	41.468	0.131	20.008	4.737	19.476	5.819	0.484	7.635	0.018	0.000	99.776
99NPT-145-GP-1	41.654	0.064	20.270	4.657	19.437	5.672	0.496	7.656	0.019	0.000	99.925
99NPT-147-01	41.860	0.041	21.017	3.433	20.757	4.405	0.534	7.633	0.023	0.009	99.712
99NPT-150-01	40.857	0.636	16.314	8.998	19.906	6.224	0.302	6.353	0.080	0.000	99.670
99NPT-151-01	41.510	0.042	20.744	3.533	18.657	6.445	0.590	8.124	0.004	0.012	99.661
99NPT-154-01	41.394	0.023	21.362	3.194	19.002	5.720	0.596	8.758	0.006	0.002	100.057
99NPT-154-02	41.095	0.100	18.609	6.465	19.178	5.888	0.413	8.040	0.015	0.000	99.803
99NPT-156-GP-1	42.106	0.001	19.990	5.241	20.467	5.009	0.483	7.243	0.023	0.000	100.563
99NPT-162-01	41.927	0.028	22.598	1.417	19.870	4.598	0.640	9.038	0.016	0.000	100.132
99NPT-162-02	41.440	0.094	19.857	4.867	19.670	5.163	0.502	8.158	0.029	0.000	99.780
99NPT-165-01	41.701	0.081	21.400	2.843	20.047	4.734	0.412	8.319	0.010	0.000	99.547
99NPT-166-02	41.716	0.086	20.574	4.101	19.836	5.276	0.449	7.608	0.028	0.000	99.674

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-166-03	41.460	0.048	20.494	4.224	19.744	5.036	0.487	8.018	0.015	0.000	99.526
99NPT-166-04	41.033	0.078	18.028	6.810	18.492	6.732	0.428	7.962	0.025	0.000	99.588
99NPT-167-01	41.662	0.016	21.474	2.883	19.489	5.285	0.570	8.257	0.024	0.000	99.660
99NPT-167-02	41.671	0.612	19.160	5.061	20.293	5.160	0.277	7.279	0.032	0.003	99.548
99NPT-171-01	41.700	0.113	19.756	4.896	19.783	5.286	0.480	7.958	0.022	0.001	99.995

Garnets with Kimberlitic Megacryst Characteristics (KIM)

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-003-GO-1	41.274	1.068	20.386	1.997	20.060	5.176	0.299	8.915	0.068	0.003	99.246
99NPT-012-03	41.627	0.785	20.108	3.206	20.966	5.197	0.269	7.301	0.051	0.004	99.514
99NPT-022-01	42.201	0.424	22.379	0.501	20.094	4.046	0.337	9.966	0.056	0.000	100.004
99NPT-031-GO-1	41.630	0.831	21.825	0.290	19.125	4.687	0.395	10.803	0.106	0.003	99.695
99NPT-032-01	41.721	0.910	20.345	2.230	20.194	5.181	0.308	8.532	0.060	0.000	99.481
99NPT-038-01	41.958	0.723	20.570	2.723	20.713	4.938	0.303	7.449	0.049	0.000	99.426
99NPT-043-01	41.679	0.800	21.478	0.773	19.559	4.377	0.342	10.506	0.077	0.000	99.591
99NPT-053-GO-1	41.789	0.963	20.980	0.895	19.537	4.632	0.354	10.826	0.112	0.000	100.088
99NPT-088-GO-1	41.995	0.524	21.857	0.603	19.485	4.436	0.365	10.855	0.061	0.005	100.186
99NPT-103-03	41.570	0.830	20.965	1.958	20.030	4.791	0.377	8.938	0.072	0.006	99.537
99NPT-107-05	41.553	0.767	20.147	3.449	20.347	5.265	0.322	7.608	0.046	0.000	99.504
99NPT-128-GO-1	41.534	0.837	21.328	1.096	19.622	4.760	0.337	9.962	0.069	0.000	99.545
99NPT-133-03	41.681	1.152	20.892	0.875	19.489	5.044	0.321	10.484	0.065	0.000	100.003
99NPT-145-GO-1	41.690	0.911	20.751	1.501	19.950	4.769	0.336	10.021	0.086	0.000	100.015
99NPT-145-GO-1	41.659	0.693	22.155	0.094	19.096	4.136	0.408	11.803	0.087	0.000	100.131
99NPT-165-02	41.488	0.775	21.150	0.989	19.462	4.416	0.377	10.760	0.082	0.000	99.499
99NPT-166-01	41.599	0.538	21.045	1.891	20.269	4.679	0.335	8.982	0.053	0.003	99.394
99NPT-167-03	41.391	0.624	21.874	0.435	19.167	4.080	0.361	11.366	0.059	0.006	99.363
99NPT-168-01	41.488	0.892	19.039	3.837	20.667	5.299	0.293	7.620	0.058	0.006	99.199
99NPT-171-02	41.942	0.460	21.906	1.053	21.064	4.402	0.303	8.550	0.048	0.002	99.730
99NPT-171-03	42.167	0.439	20.300	3.162	21.239	4.843	0.278	6.801	0.041	0.000	99.270
99NPT-172-01	41.752	0.683	20.225	2.922	20.146	5.420	0.306	8.248	0.046	0.000	99.748

Garnets with Eclogitic Compositional Characteristics (KIM)

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-080-GP-3	41.819	0.035	22.323	1.749	20.075	4.374	0.413	8.761	0.007	0.006	99.562
99NPT-095-GP-1	41.478	0.138	21.951	1.881	19.916	4.284	0.424	9.236	0.035	0.003	99.346
99NPT-127-02	41.836	0.207	23.272	0.091	18.943	6.433	0.256	8.554	0.024	0.000	99.616

Garnets from Crustal Sources

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-001-01	36.001	0.063	20.175	0.003	0.594	0.760	13.989	27.924	0.013	0.006	99.528
99NPT-001-02	36.058	0.001	20.424	0.000	0.703	0.826	11.962	29.789	0.005	0.000	99.768
99NPT-005-01	35.701	0.173	19.813	0.021	0.790	0.983	20.281	21.500	0.005	0.000	99.267
99NPT-005-02	35.980	0.026	20.303	0.000	0.901	0.860	10.210	31.344	0.000	0.000	99.624
99NPT-010-01	35.933	0.089	20.099	0.000	0.846	1.104	20.649	20.226	-0.048	-0.000	98.994
99NPT-013-01	35.912	0.050	20.077	0.000	0.724	1.803	17.716	22.955	0.017	0.000	99.254
99NPT-016-01	35.537	0.089	19.447	0.002	0.399	2.170	23.972	17.307	0.000	0.001	98.924
99NPT-016-02	35.819	0.190	19.694	0.000	0.836	1.749	19.891	20.591	0.040	0.000	98.810
99NPT-016-03	35.666	0.113	19.718	0.000	0.287	1.099	19.455	21.981	0.033	0.000	98.352
99NPT-034-MnAL-1	36.964	0.154	20.227	0.008	0.431	7.302	13.334	21.834	0.000	0.000	100.254

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-034-MnAL-2	37.058	0.116	20.348	0.012	0.470	9.942	11.593	20.413	0.001	0.006	99.959
99NPT-034-MnAL-3	37.114	0.148	20.097	0.000	0.364	9.312	13.656	19.524	0.003	0.000	100.218
99NPT-034-SPES-1	36.149	0.122	19.711	0.000	0.761	1.256	22.487	19.131	0.037	0.002	99.656
99NPT-044-01	37.818	0.034	20.459	0.000	2.401	12.565	1.465	24.778	0.000	0.003	99.523
99NPT-071-02	37.605	0.104	20.908	0.002	3.155	9.841	2.286	25.806	0.001	0.010	99.718
99NPT-071-03	37.449	0.062	20.480	0.000	2.458	9.298	2.594	27.323	0.000	0.000	99.664
99NPT-072-AL-1	37.121	0.010	19.918	0.000	0.460	11.624	5.220	25.542	0.011	0.002	99.908
99NPT-072-AL-2	37.345	0.162	15.384	0.000	0.034	23.152	0.506	22.663	0.000	0.000	99.246
99NPT-072-AL-3	37.396	0.109	20.483	0.000	1.267	11.059	3.507	26.080	0.008	0.007	99.916
99NPT-072-AL-4	37.454	0.072	20.326	0.000	1.463	10.675	4.506	25.382	0.005	0.000	99.883
99NPT-072-AL-5	37.073	0.035	19.926	0.000	0.524	10.353	5.150	26.787	0.010	0.002	99.860
99NPT-085-03	36.879	0.062	19.943	0.000	0.356	12.103	3.295	26.321	0.016	0.000	98.975
99NPT-085-04	37.416	0.060	19.808	0.018	1.689	12.700	3.298	24.300	0.008	0.000	99.297
99NPT-103-01	35.501	0.140	20.130	0.000	0.668	0.270	19.732	22.807	0.000	0.000	99.248
99NPT-107-01	36.091	0.088	20.270	0.004	1.277	0.905	17.420	23.491	0.022	0.005	99.573
99NPT-107-02	35.857	0.242	19.963	0.000	0.937	0.310	24.343	17.494	0.025	0.000	99.171
99NPT-107-03	36.427	0.025	20.305	0.007	1.005	0.709	14.555	27.081	0.002	0.000	100.116
99NPT-118-02	37.732	0.088	21.227	0.063	2.727	14.086	1.057	22.854	0.011	0.000	99.845
99NPT-119-MnAL-1	37.554	0.068	20.864	0.023	1.711	10.820	4.323	24.750	0.000	0.000	100.113
99NPT-119-MnAL-2	37.546	0.032	20.378	0.000	1.533	13.033	1.964	25.504	0.000	0.000	99.990
99NPT-126-AL-1	37.522	0.028	20.211	0.005	0.975	13.759	1.000	26.421	0.000	0.002	99.923
99NPT-126-AL-2	37.895	0.056	21.024	0.000	2.433	13.167	2.508	22.547	0.000	0.000	99.630
99NPT-138-01	36.691	0.030	20.738	0.002	3.070	0.745	3.185	35.423	0.000	0.006	99.890
99NPT-166-05	36.936	0.071	20.062	0.000	1.921	7.186	5.934	27.127	0.000	0.000	99.237
99NPT-167-04	36.306	0.064	19.892	0.000	0.819	1.212	13.449	28.268	0.001	0.001	100.012

Other

99NPT-076-GO-1	andradite
99NPT-074-05	andradite

Chromites

Diamond inclusion field chromite

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-012-07	0.046	0.178	0.000	4.293	66.732	0.027	14.897	0.105	12.325	0.169	0.021	98.793	3.029	9.599	99.096
99NPT-140-01	0.066	0.326	0.030	12.078	56.916	0.147	14.510	0.127	14.001	0.202	0.032	98.435	2.658	11.609	98.701

Diamond Intergrowth Field

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-074-17	0.000	0.042	0.016	6.026	63.853	0.271	9.834	0.290	18.439	0.047	0.130	98.948	0.841	17.682	99.032

Chromites unique to Lamproite and Kimberlites

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-029-06	0.000	2.303	0.002	10.029	47.485	0.449	8.759	0.252	29.147	0.121	0.126	98.673	7.660	22.254	99.441
99NPT-030-01	0.000	2.637	0.000	12.120	46.036	0.449	9.791	0.310	27.248	0.137	0.090	98.818	6.621	21.291	99.481
99NPT-057-02	0.000	2.949	0.009	1.344	47.071	0.455	6.141	0.365	39.156	0.137	0.162	97.789	15.537	25.176	99.346
99NPT-070-CR-1	0.000	2.427	0.000	9.676	46.188	0.370	7.317	0.355	32.356	0.154	0.140	98.983	8.882	24.364	99.873
99NPT-132-05	0.000	3.396	0.038	9.950	42.015	0.470	0.931	0.144	40.433	0.133	0.283	97.793	6.124	34.923	98.407

Chromite overlap field

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-001-03	0.071	0.293	0.000	12.974	55.666	0.110	12.761	0.534	16.596	0.194	0.034	99.233	2.696	14.170	99.503
99NPT-003-CR-1	0.000	0.216	0.025	12.555	55.713	0.239	12.334	0.265	17.874	0.117	0.194	99.532	3.058	15.122	99.838
99NPT-003-CR-1	0.087	0.364	0.000	12.996	53.666	0.173	11.363	0.296	20.368	0.125	0.096	99.534	3.894	16.864	99.924
99NPT-005-04	0.034	0.345	0.041	11.039	48.441	0.139	0.463	1.590	34.858	0.046	1.917	98.913	5.328	30.064	99.447
99NPT-008-02	0.011	0.512	0.050	11.339	51.768	0.315	9.096	0.252	25.558	0.106	0.118	99.125	5.821	20.320	99.708
99NPT-008-03	0.019	0.407	0.074	13.239	54.551	0.186	11.947	0.220	18.992	0.114	0.068	99.817	3.059	16.240	100.123
99NPT-010-03	0.039	0.372	0.000	14.182	50.649	0.196	9.777	0.278	23.194	0.118	0.097	98.902	4.341	19.288	99.337
99NPT-010-04	0.100	0.157	0.000	8.165	48.685	0.133	0.171	1.913	32.125	0.013	6.822	98.284	7.964	24.959	99.082
99NPT-010-05	0.057	0.413	0.009	13.356	52.754	0.217	10.066	0.516	21.831	0.079	0.099	99.397	3.417	18.757	99.739
99NPT-010-06	0.007	0.354	0.000	12.183	53.035	0.203	9.883	0.241	21.974	0.087	0.113	98.080	3.812	18.544	98.462
99NPT-012-06	0.046	0.287	0.000	12.548	51.449	0.123	4.514	1.174	29.015	0.157	0.183	99.496	3.285	26.059	99.825
99NPT-012-08	0.000	0.220	0.030	17.455	51.362	0.238	13.190	0.177	16.548	0.089	0.118	99.427	2.025	14.726	99.630
99NPT-013-02	0.004	1.124	0.000	13.941	46.406	0.251	7.009	0.267	28.778	0.048	0.124	97.952	5.342	23.971	98.487
99NPT-013-03	0.038	0.328	0.000	14.400	50.675	0.152	10.331	0.205	22.253	0.140	0.082	98.604	4.354	18.336	99.040
99NPT-013-04	0.016	0.454	0.000	12.213	53.295	0.235	9.752	0.301	22.406	0.086	0.098	98.856	3.672	19.102	99.224
99NPT-013-05	0.000	0.608	0.000	11.592	53.740	0.301	10.008	0.301	22.666	0.104	0.129	99.449	4.092	18.984	99.859
99NPT-013-06	0.040	0.300	0.000	13.492	52.490	0.147	9.399	0.255	22.609	0.114	0.064	98.910	3.277	19.661	99.238

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-013-07	0.000	1.333	0.000	14.150	48.433	0.330	9.795	0.268	24.800	0.177	0.152	99.438	4.932	20.363	99.932
99NPT-018-CR-1	0.024	0.473	0.086	8.419	51.416	0.057	0.659	4.507	30.734	0.052	2.263	98.690	5.229	26.029	99.214
99NPT-022-02	0.078	0.197	0.000	8.871	60.287	0.100	11.302	0.375	18.092	0.115	0.067	99.484	2.384	15.947	99.723
99NPT-023-01	0.000	0.617	0.023	8.460	51.993	0.116	4.797	1.237	31.410	0.072	0.349	99.074	7.096	25.025	99.785
99NPT-023-02	0.132	1.322	0.000	22.988	39.389	0.145	14.430	0.135	19.925	0.252	0.083	98.801	6.059	14.473	99.408
99NPT-029-02	0.047	0.423	0.000	12.712	51.823	0.132	10.918	0.343	22.537	0.105	0.071	99.111	5.788	17.329	99.691
99NPT-029-05	0.040	0.309	0.000	14.107	53.111	0.128	11.970	0.165	19.019	0.167	0.061	99.077	3.468	15.899	99.424
99NPT-029-07	0.080	0.305	0.048	14.093	53.033	0.152	11.779	0.183	19.197	0.140	0.029	99.039	3.174	16.341	99.357
99NPT-029-08	0.107	0.850	0.010	32.983	32.599	0.134	17.054	0.110	14.975	0.282	0.052	99.156	3.678	11.665	99.525
99NPT-030-02	0.099	0.287	0.002	13.303	56.193	0.122	15.343	0.140	13.488	0.223	0.028	99.228	3.098	10.701	99.538
99NPT-031-CR-1	0.030	0.017	0.000	24.485	44.016	0.151	15.454	0.230	15.294	0.169	0.098	99.944	3.507	12.138	100.295
99NPT-031-CR-2	0.104	0.286	0.005	14.269	55.503	0.145	15.999	0.194	12.784	0.220	0.000	99.509	3.141	9.958	99.824
99NPT-032-02	0.052	0.589	0.041	11.930	50.273	0.174	2.461	1.231	31.070	0.027	1.021	98.869	2.755	28.591	99.145
99NPT-035-01	0.123	0.874	0.000	33.585	30.855	0.157	16.946	0.134	16.563	0.268	0.072	99.577	4.936	12.121	100.072
99NPT-036-CR-1	0.126	1.072	0.000	21.841	44.774	0.086	16.237	0.206	15.187	0.154	0.017	99.700	4.053	11.540	100.106
99NPT-036-CR-2	0.081	0.335	0.000	16.094	51.862	0.201	13.827	0.221	16.549	0.202	0.011	99.383	3.267	13.610	99.710
99NPT-036-CR-3	0.002	0.267	0.000	13.850	54.688	0.183	13.735	0.250	16.024	0.082	0.050	99.131	3.168	13.174	99.448
99NPT-036-CR-4	0.041	0.498	0.000	6.484	56.672	0.056	6.191	1.333	27.682	0.125	0.048	99.130	5.722	22.533	99.703
99NPT-037-02	0.000	0.470	0.009	12.855	51.855	0.221	10.422	0.270	22.968	0.110	0.092	99.272	5.155	18.329	99.789
99NPT-038-03	0.032	0.622	0.000	12.022	51.168	0.166	11.968	0.206	22.547	0.139	0.061	98.931	7.378	15.908	99.670
99NPT-038-06	0.026	0.324	0.000	13.570	53.096	0.158	7.203	0.317	24.415	0.067	0.258	99.434	1.573	23.000	99.592
99NPT-040-02	0.023	0.615	0.000	11.965	51.373	0.251	9.434	0.237	25.069	0.097	0.102	99.166	5.731	19.913	99.740
99NPT-040-03	0.074	0.276	0.090	13.843	55.434	0.102	15.075	0.121	13.655	0.196	0.015	98.881	2.786	11.148	99.160
99NPT-059-01	0.000	0.573	0.000	11.459	51.599	0.223	8.733	0.351	26.301	0.107	0.097	99.443	6.146	20.770	100.059
99NPT-059-02	0.000	0.072	0.009	12.538	56.505	0.222	12.471	0.227	17.217	0.086	0.104	99.451	2.624	14.856	99.714
99NPT-059-03	0.000	0.386	0.037	13.863	53.881	0.203	13.058	0.197	17.394	0.102	0.144	99.265	3.353	14.377	99.601
99NPT-061-02	0.053	0.278	0.000	13.251	53.456	0.176	11.124	0.219	20.310	0.133	0.081	99.081	3.583	17.086	99.440
99NPT-061-03	0.004	0.043	0.014	12.561	54.085	0.252	11.706	0.228	19.999	0.088	0.138	99.118	4.498	15.952	99.569
99NPT-061-04	0.059	0.317	0.005	14.540	51.100	0.178	10.061	0.269	22.790	0.124	0.061	99.504	4.113	19.089	99.916
99NPT-071-04	0.003	1.226	0.018	12.722	48.699	0.310	9.770	0.303	25.798	0.146	0.095	99.090	6.410	20.030	99.732
99NPT-071-05	0.024	0.506	0.000	13.705	52.776	0.208	12.285	0.216	19.434	0.157	0.064	99.375	4.154	15.697	99.791
99NPT-071-06	0.007	0.861	0.000	16.268	48.925	0.205	10.355	0.299	21.972	0.118	0.104	99.114	3.120	19.165	99.427
99NPT-071-07	0.048	0.320	0.034	12.398	51.086	0.129	4.155	1.247	29.119	0.158	0.685	99.379	3.370	26.087	99.717

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-074-06	0.000	0.116	0.016	10.186	54.276	0.044	5.637	0.254	28.358	0.099	0.199	99.185	4.252	24.532	99.611
99NPT-074-07	0.002	0.285	0.000	11.269	53.464	0.281	8.498	0.321	24.889	0.076	0.138	99.223	4.480	20.858	99.672
99NPT-074-09	0.090	0.799	0.005	29.993	33.706	0.125	15.953	0.192	18.151	0.217	0.044	99.275	5.885	12.855	99.865
99NPT-074-10	0.000	0.042	0.059	8.943	59.346	0.205	10.541	0.270	19.892	0.057	0.139	99.494	2.979	17.212	99.792
99NPT-074-11	0.056	0.228	0.000	12.719	52.996	0.194	7.238	0.894	23.859	0.121	0.736	99.041	2.472	21.635	99.289
99NPT-074-12	0.013	0.641	0.000	15.181	45.096	0.212	11.016	0.294	25.617	0.180	0.104	98.354	8.910	17.600	99.247
99NPT-074-13	0.050	0.401	0.000	14.619	50.405	0.161	10.100	0.241	23.102	0.143	0.059	99.281	4.535	19.021	99.735
99NPT-074-14	0.027	0.720	0.007	12.513	51.628	0.278	10.250	0.241	23.429	0.110	0.099	99.302	5.016	18.916	99.805
99NPT-074-15	0.011	0.329	0.005	13.670	52.466	0.173	6.153	0.309	25.754	0.064	0.356	99.290	1.385	24.508	99.429
99NPT-074-16	0.066	0.308	0.000	14.410	53.245	0.201	12.864	0.170	17.826	0.185	0.047	99.322	3.372	14.792	99.660
99NPT-074-18	0.071	0.367	0.000	12.158	51.305	0.180	5.503	0.375	28.844	0.161	0.182	99.146	3.853	25.377	99.532
99NPT-074-19	0.068	0.245	0.002	14.949	54.349	0.107	14.500	0.169	14.484	0.217	0.037	99.127	2.674	12.078	99.395
99NPT-074-20	0.042	0.322	0.062	13.690	55.361	0.100	14.954	0.125	13.783	0.203	0.027	98.669	2.881	11.191	98.958
99NPT-074-21	0.014	0.475	0.007	12.851	48.513	0.195	5.857	0.277	30.176	0.145	0.238	98.748	5.791	24.965	99.328
99NPT-074-23	0.119	0.913	0.000	33.765	30.649	0.132	16.905	0.110	16.274	0.266	0.045	99.178	4.616	12.121	99.640
99NPT-074-24	0.000	1.222	0.021	13.499	46.214	0.348	9.620	0.200	27.295	0.137	0.115	98.671	7.644	20.417	99.437
99NPT-074-25	0.101	1.198	0.000	25.897	38.193	0.162	16.088	0.147	17.121	0.237	0.032	99.176	5.221	12.423	99.699
99NPT-074-28	0.000	0.250	0.000	17.926	47.065	0.233	10.826	0.294	22.884	0.123	0.206	99.807	5.039	18.350	100.312
99NPT-074-29	0.000	1.833	0.000	10.978	48.431	0.359	9.116	0.280	27.727	0.119	0.112	98.955	7.077	21.359	99.664
99NPT-074-30	0.110	1.117	0.000	27.900	38.028	0.131	16.616	0.101	14.930	0.210	0.057	99.200	3.424	11.849	99.543
99NPT-074-31	0.036	0.362	0.000	15.098	45.930	0.170	2.240	0.334	34.850	0.094	0.494	99.608	4.556	30.750	100.065
99NPT-074-32	0.033	0.364	0.000	11.828	50.601	0.186	5.441	0.805	29.529	0.076	0.194	99.057	5.026	25.006	99.561
99NPT-074-33	0.053	0.706	0.030	12.932	47.306	0.252	4.463	0.524	32.368	0.119	0.508	99.261	5.773	27.174	99.839
99NPT-074-34	0.081	0.333	0.021	10.632	56.206	0.142	10.696	0.235	20.881	0.154	0.064	99.445	3.779	17.481	99.824
99NPT-074-35	0.031	0.414	0.032	14.516	48.663	0.219	7.002	1.167	26.708	0.117	0.230	99.099	4.421	22.730	99.542
99NPT-074-36	0.070	0.343	0.016	14.209	54.925	0.155	14.305	0.188	15.613	0.198	0.036	100.058	3.186	12.747	100.377
99NPT-074-37	0.018	1.472	0.000	13.901	48.204	0.374	10.956	0.248	23.832	0.156	0.095	99.256	5.583	18.808	99.815
99NPT-074-38	0.013	0.378	0.000	11.056	54.258	0.225	9.014	0.250	24.000	0.123	0.129	99.446	4.281	20.148	99.875
99NPT-074-39	0.061	0.279	0.000	11.730	54.161	0.119	8.188	0.842	23.273	0.176	0.122	98.951	3.076	20.506	99.259
99NPT-074-40	0.069	0.284	0.023	12.293	54.517	0.126	10.105	0.255	21.400	0.158	0.041	99.271	3.226	18.497	99.594
99NPT-074-41	0.075	0.239	0.065	12.979	57.136	0.120	15.417	0.130	12.412	0.223	0.026	98.822	2.251	10.387	99.047
99NPT-074-42	0.015	0.539	0.000	14.994	51.752	0.089	7.540	0.399	23.914	0.017	0.570	99.829	1.478	22.584	99.977
99NPT-076-CR-1	0.072	0.349	0.000	13.610	53.460	0.201	11.868	0.302	19.642	0.129	0.059	99.692	3.747	16.270	100.067
99NPT-076-CR-10	0.088	0.317	0.048	13.219	53.857	0.197	11.074	0.313	20.153	0.149	0.114	99.529	3.156	17.313	99.845
99NPT-076-CR-11	0.007	2.383	0.025	12.703	44.855	0.402	9.192	0.359	28.551	0.185	0.138	98.800	7.394	21.898	99.541

Sample	SiO_2	TiO_2	Nb_2O_5	Al_2O_3	Cr_2O_3	V_2O_5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe_2O_3	FeO	Total
99NPT-076-CR-2	0.167	0.292	0.000	10.709	53.237	0.248	9.005	0.326	24.770	0.101	0.132	98.987	5.217	20.076	99.510
99NPT-076-CR-3	0.025	0.338	0.000	12.370	53.176	0.288	10.567	0.303	21.734	0.088	0.139	99.028	4.270	17.892	99.456
99NPT-076-CR-4	0.097	0.311	0.021	14.216	55.037	0.153	14.581	0.238	15.095	0.179	0.012	99.940	3.123	12.285	100.253
99NPT-076-CR-5	0.070	0.354	0.000	15.306	50.775	0.218	12.499	0.239	19.690	0.103	0.025	99.279	4.544	15.601	99.734
99NPT-076-CR-6	0.092	0.304	0.012	12.596	56.413	0.145	14.704	0.199	14.490	0.180	0.000	99.135	3.213	11.599	99.457
99NPT-076-CR-8	0.054	0.404	0.037	15.959	51.766	0.153	13.676	0.218	16.962	0.136	0.000	99.365	3.423	13.882	99.708
99NPT-078-CR-1	0.002	2.077	0.000	11.245	46.301	0.454	8.946	0.340	29.148	0.112	0.096	98.721	8.018	21.934	99.524
99NPT-081-01	0.187	0.331	0.000	11.219	53.356	0.164	9.084	0.268	24.249	0.107	0.086	99.051	4.642	20.072	99.516
99NPT-085-05	0.068	0.313	0.000	14.067	54.037	0.157	13.468	0.182	16.260	0.186	0.023	98.761	2.985	13.574	99.060
99NPT-085-06	0.000	0.365	0.037	11.046	52.067	0.153	8.076	0.324	26.754	0.079	0.121	99.022	6.011	21.346	99.624
99NPT-085-08	0.683	0.453	0.009	11.297	48.777	0.247	2.163	0.522	33.604	0.045	0.448	98.248	3.158	30.763	98.564
99NPT-085-09	0.000	0.654	0.000	13.824	50.953	0.174	8.307	0.380	24.053	0.108	0.100	98.553	2.927	21.420	98.846
99NPT-090-01	0.000	1.254	0.005	12.301	49.191	0.278	9.178	0.268	26.050	0.161	0.097	98.783	5.901	20.741	99.374
99NPT-101-02	0.004	0.392	0.000	12.267	51.984	0.213	8.415	0.236	24.897	0.127	0.119	98.654	4.327	21.004	99.087
99NPT-101-03	0.000	1.106	0.000	13.052	49.112	0.277	9.741	0.271	24.136	0.173	0.126	97.994	5.097	19.549	98.505
99NPT-103-04	0.002	0.145	0.000	7.999	46.051	0.086	0.686	1.546	41.475	0.032	0.252	98.274	12.306	30.402	99.507
99NPT-104-02	0.009	0.908	0.000	4.374	51.393	0.206	0.060	2.755	35.680	0.031	2.977	98.393	8.623	27.921	99.257
99NPT-107-06	0.039	0.545	0.039	12.187	50.766	0.265	8.845	0.257	25.443	0.055	0.110	98.551	5.299	20.675	99.082
99NPT-111-01	0.000	0.441	0.000	12.434	48.240	0.142	5.075	0.278	31.593	0.097	0.098	98.398	6.185	26.027	99.018
99NPT-122-01	0.000	0.221	0.044	13.983	53.169	0.129	7.636	0.391	23.300	0.032	0.509	99.414	1.453	21.993	99.560
99NPT-127-03	0.014	0.357	0.000	11.249	52.043	0.164	7.916	0.287	26.725	0.093	0.093	98.941	5.659	21.633	99.508
99NPT-127-04	0.000	0.266	0.000	14.310	54.867	0.108	12.056	0.201	17.505	0.107	0.076	99.496	1.902	15.794	99.687
99NPT-127-05	0.000	0.382	0.048	11.622	53.624	0.238	10.110	0.224	22.691	0.138	0.078	99.155	4.566	18.582	99.613
99NPT-127-06	0.000	0.734	0.048	12.560	45.855	0.269	2.942	0.610	35.435	0.053	0.408	98.914	6.688	29.417	99.584
99NPT-127-07	0.032	0.349	0.000	8.601	56.424	0.122	9.750	0.283	23.721	0.073	0.118	99.473	5.768	18.531	100.051
99NPT-127-13	0.107	0.291	0.000	11.879	52.277	0.155	6.810	1.022	26.329	0.117	0.105	99.092	4.013	22.718	99.494
99NPT-127-14	0.016	0.469	0.000	12.181	52.237	0.251	9.014	0.335	24.639	0.095	0.087	99.324	4.711	20.400	99.796
99NPT-127-16	0.047	0.365	0.028	13.353	51.624	0.078	9.272	0.661	23.505	0.183	0.198	99.314	4.593	19.372	99.774
99NPT-127-17	0.079	1.031	0.000	21.130	44.084	0.096	14.678	0.128	17.513	0.193	0.044	98.976	4.435	13.522	99.420
99NPT-127-20	0.041	0.491	0.000	12.562	52.817	0.216	10.878	0.206	21.771	0.112	0.053	99.147	4.537	17.689	99.602
99NPT-127-21	0.000	0.359	0.043	10.247	48.304	0.277	2.685	1.767	34.006	0.021	0.594	98.303	7.097	27.620	99.014
99NPT-127-22	0.000	0.577	0.000	11.393	51.247	0.294	9.777	0.276	25.266	0.117	0.162	99.109	6.758	19.185	99.786
99NPT-128-CR-1	0.072	1.168	0.046	28.861	33.745	0.154	15.622	0.170	18.955	0.183	0.018	98.994	5.987	13.568	99.594
99NPT-130-01	0.024	0.382	0.069	14.482	50.770	0.204	9.895	0.229	22.619	0.124	0.089	98.887	3.734	19.259	99.261
99NPT-132-03	0.000	0.436	0.051	15.918	50.694	0.184	10.034	0.334	21.182	0.132	0.114	99.079	2.267	19.142	99.306

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-132-04	0.061	0.375	0.000	16.034	50.773	0.222	13.052	0.160	17.790	0.203	0.037	98.707	3.487	14.653	99.056
99NPT-132-06	0.060	0.300	0.034	12.991	54.335	0.155	11.754	0.203	18.968	0.167	0.046	99.013	3.191	16.096	99.333
99NPT-132-07	0.052	1.776	0.024	25.426	34.474	0.234	13.840	0.174	22.285	0.211	0.070	98.566	6.789	16.176	99.246
99NPT-132-09	0.000	0.351	0.007	14.459	51.835	0.257	8.969	0.294	22.719	0.056	0.153	99.100	2.329	20.624	99.333
99NPT-132-10	0.000	0.329	0.043	13.845	51.321	0.154	3.120	1.654	28.309	0.040	0.560	99.375	0.714	27.667	99.447
99NPT-132-11	0.006	0.295	0.000	15.294	52.106	0.120	8.374	0.363	22.518	0.022	0.395	99.493	1.404	21.255	99.634
99NPT-133-05	0.020	0.680	0.000	12.842	51.820	0.259	10.810	0.248	22.091	0.094	0.079	98.943	4.620	17.934	99.406
99NPT-133-07	0.027	0.460	0.000	13.348	49.043	0.215	5.619	0.537	29.161	0.074	0.307	98.791	4.435	25.170	99.235
99NPT-133-09	0.000	1.261	0.016	12.371	51.476	0.295	11.051	0.213	22.117	0.121	0.101	99.022	4.496	18.071	99.472
99NPT-134-01	0.061	0.276	0.000	13.459	55.344	0.176	13.034	0.191	16.433	0.142	0.076	99.192	2.433	14.244	99.436
99NPT-135-02	0.062	0.352	0.027	13.618	48.717	0.191	4.209	0.770	30.557	0.159	0.132	98.794	3.795	27.142	99.174
99NPT-135-03	0.064	0.257	0.002	12.976	53.789	0.126	9.539	0.401	21.508	0.187	0.035	98.884	2.658	19.116	99.150
99NPT-135-04	0.015	0.454	0.005	8.682	45.228	0.337	0.196	1.924	37.165	0.011	3.671	97.688	9.947	28.215	98.685
99NPT-135-06	0.020	0.292	0.037	12.800	53.791	0.123	11.383	0.195	20.261	0.128	0.064	99.094	4.071	16.598	99.502
99NPT-136-02	0.000	0.117	0.000	1.558	58.209	0.060	3.927	0.589	33.556	0.052	0.275	98.343	9.230	25.251	99.268
99NPT-136-03	0.048	0.288	0.000	12.751	55.225	0.156	13.022	0.133	16.897	0.159	0.050	98.729	3.172	14.043	99.047
99NPT-145-CR-1	0.000	0.095	0.000	13.867	53.189	0.257	11.580	0.323	19.478	0.093	0.190	99.072	3.633	16.209	99.436
99NPT-147-02	0.023	1.169	0.023	10.642	47.909	0.282	4.315	1.440	32.281	0.111	0.179	98.374	6.348	26.569	99.010
99NPT-151-03	0.069	0.297	0.000	12.470	55.233	0.149	11.683	0.356	18.814	0.183	0.022	99.276	3.100	16.025	99.587
99NPT-151-04	0.016	0.279	0.037	14.147	53.215	0.154	7.301	0.408	23.201	0.050	0.369	99.177	0.622	22.641	99.239
99NPT-151-05	0.119	0.253	0.032	13.305	55.347	0.229	12.716	0.175	16.173	0.137	0.072	98.558	1.656	14.683	98.724
99NPT-151-06	0.059	0.384	0.042	15.292	51.397	0.154	12.638	0.181	18.002	0.134	0.035	98.318	3.303	15.030	98.649
99NPT-155-01	0.101	0.264	0.000	12.557	56.584	0.104	14.694	0.146	13.175	0.203	0.028	97.856	2.319	11.089	98.088
99NPT-155-02	0.042	0.335	0.000	16.082	48.463	0.227	10.328	0.240	22.436	0.121	0.062	98.336	4.211	18.647	98.758
99NPT-155-03	0.005	0.156	0.014	12.298	54.640	0.314	11.014	0.190	19.465	0.095	0.163	98.354	2.845	16.905	98.639
99NPT-156-CR-1	0.068	0.298	0.018	11.794	49.978	0.141	1.116	1.687	33.151	0.109	0.982	99.342	3.529	29.975	99.696
99NPT-156-CR-2	0.024	0.297	0.042	16.800	54.452	0.184	13.669	0.242	13.515	0.130	0.090	99.445	0.000	13.515	99.445
99NPT-161-01	0.000	0.445	0.000	10.850	49.354	0.257	1.681	1.115	34.462	0.040	0.178	98.382	4.666	30.264	98.849
99NPT-161-02	0.043	0.315	0.000	8.300	51.663	0.046	0.469	1.499	33.974	0.001	1.922	98.232	5.158	29.333	98.749
99NPT-161-03	0.081	0.297	0.000	12.358	52.624	0.139	9.479	0.249	22.240	0.106	0.088	97.661	3.607	18.994	98.022
99NPT-161-05	0.111	1.194	0.007	26.603	36.463	0.146	16.041	0.130	16.594	0.257	0.017	97.563	5.008	12.088	98.065
99NPT-161-06	0.000	0.430	0.025	13.452	51.787	0.209	10.281	0.260	22.535	0.117	0.091	99.187	4.413	18.565	99.629
99NPT-162-03	0.071	0.395	0.007	15.026	47.402	0.208	7.788	1.152	25.380	0.151	0.197	97.777	4.654	21.193	98.243
99NPT-162-04	0.031	0.303	0.041	13.725	54.362	0.151	12.439	0.175	16.765	0.141	0.048	98.181	2.078	14.895	98.389
99NPT-162-05	0.007	0.221	0.000	11.668	46.393	0.121	0.522	1.880	35.745	0.023	1.843	98.423	6.912	29.526	99.116

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-165-03	0.000	0.448	0.000	8.447	48.741	0.113	5.566	0.339	34.586	0.074	0.151	98.465	11.072	24.623	99.574
99NPT-165-04	0.060	1.896	0.007	23.227	41.329	0.200	15.589	0.169	16.243	0.195	0.061	98.976	3.268	13.302	99.303
99NPT-165-05	0.000	0.667	0.002	8.986	47.298	0.170	6.812	0.344	33.914	0.123	0.119	98.435	12.049	23.072	99.642
99NPT-165-07	0.000	0.245	0.027	6.522	51.631	0.149	2.522	0.414	37.128	0.073	0.299	99.010	9.241	28.813	99.936
99NPT-165-08	0.000	0.893	0.000	13.267	47.343	0.257	5.297	0.399	31.264	0.077	0.179	98.976	5.406	26.400	99.518
99NPT-165-09	0.000	0.085	0.000	8.924	48.846	0.058	1.637	0.510	38.408	0.032	0.453	98.953	9.323	30.019	99.887
99NPT-166-06	0.072	0.291	0.000	13.548	53.167	0.127	10.409	0.224	21.662	0.136	0.061	99.697	3.629	18.397	100.061
99NPT-166-07	0.104	0.249	0.000	12.252	51.937	0.113	4.444	0.277	29.440	0.162	0.222	99.200	2.815	26.907	99.482
99NPT-167-05	0.040	0.348	0.021	14.664	52.416	0.204	12.020	0.198	19.158	0.165	0.057	99.291	3.373	16.123	99.629
99NPT-167-06	0.070	0.254	0.000	12.601	54.943	0.092	10.268	0.639	19.948	0.137	0.056	99.008	2.479	17.717	99.256
99NPT-168-05	0.012	1.365	0.028	14.951	46.962	0.244	8.650	0.302	26.354	0.154	0.149	99.171	4.748	22.082	99.647
99NPT-169-01	0.020	0.924	0.036	6.921	49.541	0.136	4.359	1.202	34.954	0.052	0.186	98.331	10.155	25.816	99.348
99NPT-171-04	0.000	0.008	0.000	17.404	52.702	0.238	12.526	0.186	15.566	0.091	0.180	98.901	0.351	15.250	98.936
99NPT-171-05	0.086	0.328	0.000	11.326	51.382	0.183	5.023	0.411	30.232	0.103	0.191	99.265	4.666	26.034	99.732
99NPT-171-06	0.076	0.327	0.000	12.787	53.905	0.105	10.064	0.178	21.098	0.214	0.126	98.880	2.948	18.445	99.175
99NPT-171-07	0.078	0.258	0.039	13.659	55.824	0.071	14.992	0.138	13.583	0.199	0.018	98.859	2.751	11.107	99.135
99NPT-171-08	0.051	0.293	0.035	14.413	54.777	0.124	13.965	0.147	15.142	0.156	0.064	99.167	2.428	12.957	99.410

Chromites in non-lamproitic/kimberlitic field

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-029-03	0.112	0.417	0.000	39.729	24.385	0.194	16.833	0.154	17.122	0.261	0.065	99.272	4.817	12.788	99.755
99NPT-034-CR-1	0.078	2.042	0.000	32.173	28.773	0.157	16.044	0.181	19.235	0.256	0.082	99.021	5.748	14.063	99.597
99NPT-057-01	0.069	2.014	0.002	28.633	31.157	0.197	15.921	0.161	20.762	0.185	0.077	99.178	7.631	13.896	99.943
99NPT-074-08	0.051	1.326	0.000	30.552	30.053	0.103	14.814	0.181	22.044	0.202	0.078	99.404	7.675	15.138	100.173
99NPT-132-08	0.074	0.934	0.052	34.916	27.759	0.115	15.848	0.154	18.365	0.182	0.075	98.474	5.187	13.698	98.994

Mg-ilmenites

Cr picro-ilmenite (MgO>4 wt%, Cr2O3>2 wt%): (KIM)

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-003-IM-4	0.024	53.490	0.066	0.543	2.815	0.585	13.345	0.240	27.656	0.183	0.005	98.952	3.040	24.921	99.257
99NPT-003-CRIM-1	0.044	53.340	0.055	0.531	2.684	0.531	13.365	0.247	27.903	0.185	0.004	98.889	3.594	24.669	99.249
99NPT-071-08	0.000	46.236	0.419	0.076	2.814	0.397	6.865	0.324	41.971	0.078	0.030	99.210	13.310	29.995	100.544
99NPT-150-02	0.003	44.990	0.488	0.076	3.477	0.309	7.580	0.291	41.149	0.082	0.009	98.454	15.071	27.588	99.964
99NPT-154-03	0.008	54.095	0.118	0.500	2.439	0.252	13.099	0.255	28.193	0.203	0.017	99.179	3.138	25.369	99.493

Cr-poor picro-ilmenite (MgO>4 wt%, Cr2O3 <2 wt%): (possible KIM)

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-001-04	0.007	53.812	0.160	0.194	0.314	0.345	11.571	0.300	33.256	0.021	0.023	100.003	5.671	28.153	100.571
99NPT-003-IM-1	0.019	52.933	0.125	0.314	0.514	0.623	12.819	0.341	31.313	0.100	0.004	99.105	6.512	25.454	99.757
99NPT-003-IM-2	0.000	43.964	0.202	0.228	0.540	1.012	6.430	0.234	44.829	0.027	0.047	97.513	16.937	29.589	99.210
99NPT-003-IM-3	0.029	52.800	0.134	0.505	0.331	0.703	12.150	0.318	31.920	0.045	0.049	98.984	5.789	26.711	99.564
99NPT-010-07	0.020	53.128	0.193	0.390	1.385	0.281	11.805	0.272	31.539	0.105	0.020	99.138	5.021	27.021	99.641
99NPT-012-09	0.014	47.738	0.239	0.132	0.787	0.373	6.983	0.289	42.413	0.040	0.007	99.015	12.671	31.012	100.284
99NPT-013-08	0.032	52.685	0.037	0.565	0.169	0.302	11.274	0.251	33.765	0.082	0.012	99.174	6.964	27.498	99.872
99NPT-024-IM-1	0.044	52.482	0.103	0.301	1.769	0.603	12.074	0.247	31.041	0.097	0.027	98.788	5.127	26.428	99.302
99NPT-029-10	0.019	48.782	0.125	0.411	0.292	0.440	7.814	0.237	40.855	0.024	0.020	99.019	11.491	30.515	100.170
99NPT-031-IM-1	0.029	52.769	0.098	0.574	0.148	0.635	11.560	0.299	32.219	0.028	0.014	98.373	5.073	27.654	98.881
99NPT-031-IM-2	0.000	53.943	0.164	0.454	0.490	0.684	14.102	0.459	28.794	0.089	0.000	99.179	5.232	24.086	99.703
99NPT-031-IM-3	0.012	54.551	0.138	0.507	0.756	0.668	13.397	0.268	28.798	0.087	0.032	99.214	3.090	26.017	99.524
99NPT-032-03	0.023	48.514	0.217	0.146	0.759	0.375	7.496	0.283	41.346	0.029	0.016	99.204	11.727	30.794	100.379
99NPT-037-03	0.011	49.613	0.169	0.208	1.286	0.340	8.253	0.279	39.109	0.043	0.019	99.330	9.790	30.300	100.311
99NPT-061-05	0.022	53.889	0.129	0.462	0.274	0.227	11.987	0.282	31.924	0.076	0.018	99.290	5.196	27.249	99.811
99NPT-074-43	0.004	52.893	0.013	0.388	0.345	0.264	10.635	0.274	34.373	0.039	0.029	99.257	6.296	28.708	99.888
99NPT-075-02	0.006	52.133	0.114	0.526	0.682	0.361	10.501	0.233	34.754	0.038	0.029	99.377	6.872	28.570	100.066
99NPT-088-IM-1	0.004	48.552	0.249	0.254	0.437	0.490	7.726	0.263	40.135	0.037	0.000	98.147	10.553	30.639	99.204
99NPT-103-05	0.015	52.386	0.044	0.496	0.338	0.374	10.965	0.283	34.732	0.045	0.002	99.680	7.600	27.893	100.441
99NPT-106-IM-1	0.011	51.643	0.339	0.233	0.325	0.669	11.788	0.280	33.116	0.053	0.000	98.457	7.313	26.536	99.190
99NPT-127-23	0.026	48.687	0.055	0.374	0.699	0.373	7.648	0.268	40.750	0.034	0.005	98.919	11.364	30.524	100.058
99NPT-127-27	0.012	47.003	0.007	0.272	0.338	0.435	6.979	0.299	43.272	0.007	0.000	98.624	14.494	30.231	100.076
99NPT-127-28	0.006	52.796	0.202	0.252	0.823	0.292	10.747	0.330	34.011	0.053	0.011	99.523	5.994	28.618	100.124
99NPT-132-12	0.007	50.017	0.425	0.158	1.043	0.325	9.114	0.320	37.530	0.062	0.003	99.004	9.111	29.332	99.917
99NPT-136-04	0.014	47.151	0.081	0.293	0.355	0.412	6.824	0.250	43.214	0.025	0.006	98.625	13.893	30.713	100.017

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-140-02	0.010	49.786	0.147	0.257	0.304	0.359	8.570	0.264	39.054	0.038	0.011	98.800	10.148	29.923	99.817
99NPT-140-03	0.015	51.660	0.044	0.582	0.133	0.306	10.271	0.239	35.792	0.048	0.018	99.108	8.218	28.397	99.931
99NPT-151-07	0.012	48.636	0.020	0.320	0.363	0.337	7.175	0.280	42.011	0.018	0.025	99.197	12.020	31.196	100.401
99NPT-154-05	0.035	53.835	0.118	0.467	1.322	0.279	12.398	0.274	29.421	0.097	0.010	98.256	3.192	26.549	98.576
99NPT-156-IM-1	0.038	53.044	0.083	0.567	1.388	0.568	12.598	0.307	30.319	0.161	0.027	99.100	5.030	25.793	99.604
99NPT-167-07	0.019	55.073	0.086	0.457	1.042	0.278	13.467	0.290	28.952	0.077	0.017	99.758	3.616	25.698	100.120
99NPT-168-03	0.021	48.890	0.107	0.352	0.583	0.435	8.112	0.271	40.203	0.031	0.008	99.013	11.311	30.025	100.146
99NPT-168-06	0.007	53.631	0.105	0.275	0.390	0.293	11.288	0.292	32.287	0.030	0.013	98.611	4.363	28.361	99.048
99NPT-168-07	0.004	48.150	0.179	0.153	0.753	0.324	6.997	0.275	41.622	0.036	0.011	98.504	11.563	31.218	99.663
99NPT-171-09	0.028	50.029	0.040	0.590	0.142	0.354	8.721	0.219	39.266	0.051	0.020	99.460	10.525	29.795	100.515

Other Ilmenite

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-001-05	0.000	51.669	0.069	0.044	0.000	0.077	0.555	0.697	47.424	0.004	0.000	100.539	2.738	44.961	100.813
99NPT-003-IM-1	0.004	51.607	0.000	0.020	0.000	0.221	1.312	0.752	44.857	0.002	0.077	98.852	1.406	43.592	98.993
99NPT-005-03	0.023	53.132	0.086	0.014	0.022	0.044	0.201	3.796	42.509	0.003	0.003	99.833	0.000	42.509	99.833
99NPT-013-09	0.000	50.367	0.000	0.127	0.080	0.277	2.326	0.453	45.721	0.014	0.038	99.403	5.158	41.079	99.920
99NPT-013-10	0.015	52.897	0.000	0.017	0.020	0.040	0.025	4.110	42.620	0.007	0.004	99.755	0.000	42.620	99.755
99NPT-014-01	0.000	51.095	0.024	0.026	0.004	0.000	0.171	0.560	48.005	0.009	0.042	99.936	3.278	45.055	100.264
99NPT-029-04	0.018	51.411	0.024	0.007	0.042	0.269	0.053	3.064	43.156	0.000	0.002	98.046	0.000	43.156	98.046
99NPT-029-09	0.016	50.503	0.022	0.054	0.045	0.131	2.857	0.484	44.894	0.055	0.004	99.065	5.409	40.027	99.607
99NPT-029-11	0.015	50.766	0.050	0.018	0.183	1.712	0.153	0.082	46.716	0.015	0.019	99.729	0.000	46.716	99.729
99NPT-031-CRIM-1	0.014	47.998	0.113	0.060	0.011	0.420	0.318	0.485	48.831	0.028	0.031	98.309	6.644	42.852	98.975
99NPT-032-05	0.008	51.021	0.032	0.044	0.033	0.429	0.731	0.919	46.452	0.018	0.015	99.702	2.349	44.339	99.937
99NPT-032-06	0.016	49.179	0.065	0.030	0.080	0.900	0.247	0.316	48.735	0.000	0.008	99.576	4.186	44.968	99.995
99NPT-032-07	0.000	51.932	0.000	0.090	0.058	0.202	2.666	0.612	44.233	0.000	0.022	99.815	2.894	41.629	100.105
99NPT-037-04	0.003	52.034	0.037	0.000	0.015	0.065	1.192	0.690	45.513	0.001	0.003	99.553	1.558	44.111	99.709
99NPT-038-04	0.004	52.733	0.019	0.073	0.012	0.193	2.353	0.596	44.363	0.000	0.018	100.364	1.584	42.938	100.523
99NPT-038-05	0.000	52.557	0.000	0.036	0.032	0.120	1.613	0.672	44.679	0.001	0.023	99.733	0.893	43.875	99.823
99NPT-038-07	0.004	51.877	0.032	0.000	0.004	0.000	0.112	1.185	46.527	0.000	0.050	99.791	1.424	45.246	99.934
99NPT-043-02	0.030	49.936	0.091	0.024	0.032	0.065	0.172	0.912	48.066	0.000	0.049	99.377	4.665	43.868	99.844
99NPT-057-03	0.001	52.061	0.069	0.089	0.038	0.416	2.019	0.580	44.815	0.020	0.035	100.143	1.669	43.313	100.310
99NPT-057-04	0.000	51.739	0.024	0.106	0.032	0.159	2.578	0.520	44.475	0.014	0.026	99.673	3.144	41.646	99.988
99NPT-074-22	0.003	52.055	0.000	0.056	0.035	0.134	1.601	0.605	44.836	0.013	0.042	99.380	1.473	43.510	99.528
99NPT-074-26	0.024	52.750	0.024	0.071	0.033	0.056	2.351	0.579	43.960	0.001	0.029	99.878	1.316	42.776	100.010

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-074-27	0.017	53.291	0.075	0.027	0.024	0.028	2.042	0.592	42.766	0.012	0.000	98.874	0.000	42.766	98.874
99NPT-074-44	0.015	52.436	0.000	0.104	0.042	0.124	2.562	0.567	44.325	0.006	0.023	100.204	2.360	42.201	100.440
99NPT-074-45	0.000	52.766	0.052	0.065	0.036	0.178	2.489	0.554	43.916	0.008	0.020	100.084	1.279	42.765	100.212
99NPT-074-46	0.000	52.133	0.015	0.104	0.024	0.189	2.585	0.571	44.375	0.003	0.014	100.013	2.645	41.995	100.278
99NPT-074-47	0.018	52.323	0.000	0.094	0.035	0.270	1.498	0.628	45.507	0.000	0.037	100.410	1.495	44.161	100.560
99NPT-074-48	0.012	52.532	0.000	0.036	0.001	0.055	1.126	0.837	45.474	0.005	0.045	100.123	1.147	44.442	100.238
99NPT-074-49	0.024	51.822	0.026	0.143	0.065	0.382	3.406	0.450	43.771	0.020	0.014	100.123	3.408	40.704	100.464
99NPT-074-50	0.000	52.158	0.013	0.096	0.008	0.310	2.844	0.544	43.999	0.023	0.017	100.012	2.499	41.751	100.262
99NPT-103-06	0.000	51.223	0.136	0.011	0.000	0.000	0.227	1.142	47.080	0.000	0.049	99.868	2.751	44.605	100.144
99NPT-103-07	0.010	49.136	0.030	0.022	0.021	0.146	0.316	0.477	49.446	0.013	0.008	99.625	6.725	43.395	100.299
99NPT-107-07	0.008	51.669	0.048	0.748	7.208	0.363	14.221	0.208	24.589	0.277	0.013	99.352	3.691	21.268	99.722
99NPT-120-02	0.009	47.028	0.000	0.021	0.096	0.989	0.024	0.862	49.814	0.012	0.023	98.878	7.667	42.916	99.646
99NPT-127-08	0.000	48.267	0.000	0.000	0.106	0.199	0.274	0.539	49.597	0.000	0.005	98.987	7.687	42.680	99.757
99NPT-127-09	0.009	52.122	0.011	0.112	0.047	0.177	2.599	0.536	44.399	0.013	0.018	100.043	2.699	41.970	100.313
99NPT-127-10	0.003	51.978	0.000	0.033	0.016	0.083	0.696	0.766	46.243	0.000	0.036	99.854	1.573	44.828	100.012
99NPT-127-11	0.004	53.273	0.022	0.031	0.005	0.041	2.059	0.627	43.904	0.000	0.025	99.991	0.257	43.673	100.017
99NPT-127-12	0.015	49.253	0.000	0.080	0.040	0.239	0.556	0.583	48.541	0.000	0.042	99.349	6.082	43.068	99.958
99NPT-127-15	0.004	51.682	0.006	0.121	0.045	0.307	2.288	0.514	44.374	0.011	0.048	99.400	2.282	42.321	99.629
99NPT-127-18	0.025	48.749	0.032	0.023	0.032	0.162	0.067	2.139	47.813	0.000	0.013	99.055	6.615	41.861	99.718
99NPT-127-19	0.000	51.915	0.045	0.068	0.012	0.167	1.887	0.613	44.814	0.000	0.055	99.576	2.055	42.965	99.782
99NPT-127-24	0.010	51.625	0.000	0.101	0.033	0.339	3.069	0.512	44.097	0.009	0.023	99.818	3.492	40.955	100.168
99NPT-127-25	0.021	51.407	0.024	0.112	0.002	0.059	1.513	0.663	45.215	0.003	0.007	99.026	2.467	42.995	99.273
99NPT-127-26	0.000	52.107	0.026	0.032	0.018	0.109	1.164	0.744	45.350	0.000	0.025	99.575	1.270	44.208	99.702
99NPT-127-29	0.012	51.759	0.000	0.079	0.009	0.073	1.814	0.654	45.029	0.018	0.008	99.455	2.528	42.755	99.708
99NPT-127-30	0.005	51.736	0.000	0.097	0.035	0.304	2.393	0.544	44.559	0.000	0.022	99.695	2.649	42.175	99.960
99NPT-127-31	0.022	50.385	0.011	0.138	0.046	0.318	2.022	0.512	45.859	0.000	0.041	99.354	4.632	41.691	99.818
99NPT-127-32	0.004	50.034	0.000	0.099	0.000	0.173	0.519	1.452	46.933	0.009	0.029	99.252	4.547	42.841	99.708
99NPT-127-33	0.000	51.115	0.063	0.012	0.024	0.065	0.060	3.413	45.292	0.001	0.017	100.062	3.040	42.556	100.367
99NPT-127-34	0.002	52.692	0.013	0.027	0.000	0.031	0.429	0.888	46.210	0.008	0.032	100.332	0.513	45.749	100.383
99NPT-127-35	0.000	51.309	0.045	0.000	0.011	0.083	0.033	1.503	46.593	0.016	0.015	99.608	2.093	44.710	99.818
99NPT-132-13	0.001	52.130	0.009	0.085	0.013	0.064	1.684	0.700	44.759	0.015	0.000	99.460	1.660	43.266	99.626
99NPT-132-14	0.020	52.647	0.047	0.014	0.029	0.101	0.257	2.076	44.898	0.003	0.017	100.109	0.000	44.898	100.109
99NPT-132-15	0.071	51.472	0.002	0.023	0.207	0.103	0.163	2.459	45.069	0.025	0.023	99.617	1.510	43.711	99.768
99NPT-132-16	0.000	50.748	0.067	0.000	0.044	0.552	0.064	1.133	47.164	0.000	0.028	99.800	2.079	45.293	100.008
99NPT-132-17	0.000	51.905	0.000	0.052	0.001	0.013	0.994	0.790	45.328	0.000	0.020	99.103	1.357	44.107	99.239
99NPT-132-18	0.000	51.804	0.041	0.095	0.040	0.254	2.405	0.497	44.144	0.013	0.008	99.301	2.136	42.222	99.515

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-132-19	0.019	51.123	0.000	0.112	0.026	0.130	1.935	0.559	45.395	0.000	0.020	99.319	3.586	42.168	99.678
99NPT-133-04	0.000	52.552	0.060	0.060	0.024	0.166	1.807	0.646	44.650	0.011	0.036	100.012	1.092	43.668	100.121
99NPT-133-06	0.000	50.646	0.024	0.086	0.020	0.271	1.292	1.009	46.487	0.001	0.022	99.858	4.261	42.653	100.285
99NPT-133-08	0.011	50.252	0.047	0.051	0.028	0.166	0.911	0.587	47.061	0.000	0.039	99.153	4.221	43.263	99.576
99NPT-133-10	0.004	51.835	0.004	0.091	0.033	0.143	1.500	0.674	45.466	0.000	0.022	99.772	2.215	43.473	99.994
99NPT-133-11	0.137	54.060	0.071	0.037	0.052	0.297	0.000	2.811	35.555	0.000	0.397	93.417	0.000	35.555	93.417
99NPT-133-12	0.000	51.150	0.022	0.000	0.003	0.000	0.009	2.708	46.046	0.011	0.007	99.956	3.113	43.245	100.268
99NPT-133-13	0.007	50.153	0.000	0.129	0.038	0.206	2.011	0.459	46.231	0.005	0.021	99.260	5.411	41.362	99.802
99NPT-133-14	0.012	50.289	0.000	0.103	0.062	0.195	1.945	0.488	46.187	0.012	0.020	99.313	5.147	41.555	99.829
99NPT-133-15	0.013	50.772	0.028	0.102	0.023	0.144	1.961	0.564	45.518	0.001	0.021	99.147	4.082	41.845	99.556
99NPT-134-02	0.082	51.916	0.157	0.080	0.014	0.043	0.034	2.509	44.541	0.000	0.016	99.392	0.151	44.405	99.407
99NPT-134-03	0.006	51.368	0.015	0.054	0.034	0.142	1.823	0.622	45.534	0.001	0.011	99.610	3.315	42.551	99.942
99NPT-134-04	0.002	47.642	0.000	0.082	0.132	0.346	1.636	0.441	48.240	0.013	0.028	98.562	9.167	39.992	99.480
99NPT-135-07	0.002	51.694	0.013	0.135	0.019	0.154	2.381	0.563	44.756	0.014	0.036	99.767	3.188	41.887	100.086
99NPT-135-08	0.018	52.618	0.000	0.050	0.010	0.162	1.516	0.644	44.909	0.000	0.059	99.986	0.801	44.188	100.066
99NPT-135-09	0.000	52.035	0.063	0.034	0.000	0.008	0.333	0.970	45.890	0.010	0.047	99.390	0.715	45.246	99.462
99NPT-135-10	0.014	49.863	0.030	0.093	0.040	0.234	1.560	0.546	46.858	0.013	0.049	99.300	5.544	41.869	99.855
99NPT-136-01	0.017	50.568	0.000	0.088	0.020	0.330	1.468	0.483	46.250	0.000	0.032	99.256	3.744	42.882	99.631
99NPT-136-05	0.000	52.096	0.000	0.046	0.000	0.124	1.710	0.665	44.944	0.000	0.020	99.605	1.822	43.305	99.788
99NPT-136-06	0.022	51.916	0.028	0.101	0.027	0.218	2.292	0.624	44.108	0.014	0.024	99.374	1.970	42.335	99.571
99NPT-136-07	0.000	51.979	0.000	0.094	0.000	0.054	1.663	0.659	44.977	0.002	0.005	99.433	1.986	43.190	99.632
99NPT-136-08	0.000	52.604	0.035	0.018	0.034	0.140	1.593	0.727	44.643	0.005	0.017	99.816	0.750	43.968	99.891
99NPT-136-09	0.018	52.325	0.063	0.060	0.018	0.037	1.594	0.694	44.732	0.000	0.032	99.573	1.225	43.630	99.696
99NPT-136-10	0.000	42.701	0.024	0.019	0.024	0.138	0.096	1.773	53.493	0.002	0.005	98.275	18.697	36.670	100.148
99NPT-136-11	0.007	51.940	0.020	0.063	0.042	0.231	2.288	0.656	44.305	0.000	0.039	99.591	2.199	42.326	99.811
99NPT-136-12	0.024	49.976	0.013	0.112	0.062	0.385	1.326	0.454	47.183	0.000	0.023	99.558	4.928	42.749	100.052
99NPT-138-02	0.018	52.296	0.000	0.056	0.000	0.068	1.280	0.718	45.065	0.000	0.038	99.539	1.056	44.114	99.645
99NPT-138-03	0.054	51.580	0.028	0.052	0.031	0.195	1.668	0.587	45.068	0.009	0.018	99.290	2.082	43.195	99.499
99NPT-139-01	0.092	62.525	0.000	0.272	0.056	0.165	0.352	0.372	27.950	0.009	0.000	91.793	0.000	27.950	91.793
99NPT-140-04	0.002	52.274	0.043	0.025	0.000	0.030	0.229	2.287	45.177	0.000	0.017	100.084	0.903	44.364	100.175
99NPT-140-05	0.007	51.948	0.013	0.092	0.046	0.198	2.221	0.523	44.635	0.000	0.008	99.691	2.312	42.555	99.923
99NPT-140-06	0.016	52.765	0.067	0.022	0.008	0.053	1.074	0.767	45.308	0.006	0.020	100.106	0.442	44.910	100.150
99NPT-140-08	0.002	51.905	0.061	0.107	0.018	0.206	2.438	0.630	44.167	0.004	0.002	99.540	2.318	42.081	99.772
99NPT-150-03	0.000	51.742	0.000	0.116	0.020	0.142	2.134	0.540	44.821	0.000	0.024	99.539	2.710	42.382	99.811
99NPT-150-04	0.000	49.260	0.309	0.019	0.038	0.024	0.106	5.549	44.022	0.000	0.024	99.351	5.760	38.839	99.928

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
99NPT-151-02	0.000	51.545	0.017	0.047	0.015	0.107	1.156	0.671	45.765	0.000	0.014	99.337	2.198	43.787	99.557
99NPT-154-04	0.009	50.221	0.034	0.018	0.000	0.000	0.024	3.046	45.704	0.009	0.010	99.075	4.046	42.063	99.480
99NPT-154-06	0.000	51.607	0.017	0.139	0.023	0.197	2.577	0.591	44.123	0.003	0.024	99.301	2.890	41.522	99.591
99NPT-161-04	0.000	52.161	0.006	0.054	0.000	0.002	1.356	0.681	44.330	0.002	0.028	98.620	0.608	43.783	98.681
99NPT-161-07	0.023	52.310	0.000	0.027	0.014	0.056	1.127	0.756	45.581	0.000	0.008	99.902	1.341	44.375	100.036
99NPT-161-08	0.000	52.029	0.028	0.086	0.000	0.139	1.600	0.623	45.553	0.000	0.006	100.064	2.227	43.549	100.287
99NPT-165-06	0.021	50.858	0.000	0.000	0.027	0.080	0.070	2.140	46.174	0.000	0.000	99.370	2.868	43.593	99.657
99NPT-165-10	0.033	49.704	0.000	0.024	0.052	0.129	0.364	0.357	48.615	0.000	0.017	99.295	5.224	43.914	99.818
99NPT-165-11	0.014	50.314	0.080	0.016	0.042	0.165	0.194	0.299	48.717	0.020	0.021	99.882	4.217	44.922	100.305
99NPT-166-08	0.000	49.956	0.000	0.087	0.041	0.248	2.453	0.482	46.246	0.017	0.028	99.558	6.481	40.414	100.207
99NPT-167-08	0.015	50.122	0.059	0.066	0.010	0.134	1.247	0.561	47.275	0.003	0.044	99.536	5.269	42.534	100.064
99NPT-171-10	0.004	50.545	0.000	0.130	0.054	0.226	3.189	0.476	44.690	0.030	0.022	99.366	5.655	39.601	99.933
99NPT-172-02	0.000	48.467	0.085	0.007	0.012	0.095	0.079	2.283	48.557	0.001	0.021	99.607	8.006	41.353	100.409

Cr-Diopside

Pyroxene related to kimberlite

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-001-06	54.038	0.013	1.728	0.654	14.757	22.909	0.189	4.440	1.120	0.000	99.848
99NPT-018-2	53.821	0.285	1.709	1.580	16.912	19.362	0.089	3.239	1.417	0.018	98.432
99NPT-022-06	55.215	0.178	2.848	2.289	15.847	20.856	0.056	1.236	2.189	0.001	100.715
99NPT-024-1a	53.771	0.017	1.480	0.606	14.577	22.538	0.203	4.696	1.154	0.001	99.043
99NPT-031-1	53.818	0.047	1.501	0.496	14.778	23.203	0.223	4.884	0.897	0.002	99.849
99NPT-035-03	54.443	0.283	1.533	2.111	16.902	19.064	0.137	3.720	1.802	0.007	100.002
99NPT-037-06	55.064	0.060	0.377	2.556	16.421	21.605	0.092	2.047	1.690	0.000	99.912
99NPT-038-08	54.505	0.000	0.571	0.627	15.828	24.132	0.135	3.929	0.694	0.000	100.421
99NPT-038-09	53.950	0.059	1.556	0.654	15.078	23.102	0.159	4.329	1.130	0.000	100.017
99NPT-038-10	54.307	0.062	1.194	0.511	15.320	23.098	0.140	4.129	1.018	0.000	99.779
99NPT-038-11	54.648	0.018	1.455	0.853	15.047	23.073	0.146	4.211	1.202	0.000	100.653
99NPT-041-02	54.191	0.055	1.530	0.209	15.265	23.639	0.159	4.772	0.845	0.000	100.665
99NPT-041-03	54.383	0.023	1.386	0.361	15.219	23.311	0.166	4.345	0.987	0.000	100.181
99NPT-045-2	55.224	0.189	3.954	0.669	17.544	15.183	0.135	4.608	2.459	0.015	99.980
99NPT-058-2	55.112	0.017	1.275	0.964	15.123	22.903	0.129	3.809	1.172	0.000	100.504
99NPT-058-3	54.505	0.077	1.515	0.626	15.016	22.658	0.183	4.528	1.286	0.000	100.394
99NPT-058-4	54.787	0.038	1.010	0.621	15.395	23.051	0.142	4.218	1.086	0.000	100.348
99NPT-058-5	54.658	0.071	1.318	0.589	15.168	22.880	0.165	4.332	1.132	0.000	100.313
99NPT-058-6	54.664	0.040	0.493	0.415	15.722	23.650	0.181	4.214	0.581	0.000	99.960
99NPT-061-06	54.429	0.050	1.211	0.552	15.356	23.435	0.155	4.153	0.984	0.003	100.328
99NPT-061-07	53.799	0.028	1.308	0.390	15.038	23.535	0.200	4.835	0.861	0.003	99.997
99NPT-069-1a	55.115	0.106	1.073	1.601	15.985	21.397	0.074	2.527	1.891	0.000	99.769
99NPT-069-1b	55.528	0.274	2.850	0.815	18.089	16.689	0.148	4.127	1.915	0.021	100.456
99NPT-070-1	55.179	0.103	2.674	2.297	15.564	20.666	0.069	1.330	2.181	0.000	100.063
99NPT-072-1a	54.747	0.166	2.050	2.754	15.980	19.000	0.098	2.721	2.250	0.005	99.771
99NPT-072-2	55.110	0.131	2.993	1.546	15.571	20.577	0.038	2.067	2.241	0.006	100.280
99NPT-076-1	54.843	0.217	1.255	1.582	16.643	20.634	0.104	3.084	1.549	0.004	99.915
99NPT-083-1	54.812	0.044	1.041	0.464	15.744	23.823	0.212	3.816	0.709	0.000	100.665
99NPT-085-11	54.096	0.000	1.477	0.281	15.271	23.618	0.206	4.177	1.007	0.000	100.133
99NPT-086-02	53.976	0.000	1.141	0.535	15.677	23.629	0.129	3.725	0.824	0.000	99.636
99NPT-086-03	53.970	0.020	1.563	0.533	15.133	23.362	0.149	4.145	1.021	0.000	99.896
99NPT-086-04	54.432	0.045	1.673	0.446	15.265	23.152	0.142	3.869	1.139	0.000	100.163
99NPT-086-05	53.810	0.058	1.329	0.457	15.580	23.544	0.203	3.813	0.805	0.006	99.605
99NPT-086-06	54.295	0.053	1.695	0.516	15.322	23.171	0.155	3.864	1.083	0.000	100.154
99NPT-086-07	54.422	0.009	1.255	0.481	15.869	23.792	0.209	3.280	0.771	0.000	100.088
99NPT-086-08	53.750	0.005	1.222	0.274	15.230	23.723	0.169	4.665	0.808	0.000	99.846
99NPT-092-1	54.842	0.000	0.917	0.648	15.245	23.358	0.239	4.470	0.875	0.000	100.594
99NPT-092-11	54.335	0.015	0.970	0.563	15.598	23.494	0.197	4.167	0.874	0.000	100.213
99NPT-092-2	54.669	0.034	0.921	0.912	15.252	23.302	0.177	4.131	0.914	0.000	100.312
99NPT-092-3	54.500	0.035	0.841	0.934	15.168	23.429	0.158	4.197	0.949	0.003	100.214
99NPT-092-4	54.658	0.041	0.769	0.629	15.522	23.719	0.112	3.892	0.744	0.005	100.091
99NPT-092-5	54.219	0.030	0.967	0.719	15.621	23.837	0.160	3.899	0.739	0.003	100.194
99NPT-092-6	54.131	0.046	1.305	0.431	14.956	23.256	0.170	4.672	0.959	0.000	99.926
99NPT-092-8	54.340	0.036	1.212	0.961	15.057	22.988	0.159	4.112	1.088	0.001	99.954
99NPT-092-9	54.567	0.012	1.039	0.495	15.669	23.710	0.149	3.682	0.746	0.000	100.069
99NPT-095-1	54.799	0.107	2.831	2.254	15.546	20.551	0.073	1.521	2.232	0.003	99.917
99NPT-096-01	54.361	0.021	0.945	0.487	15.396	23.725	0.202	4.288	0.872	0.000	100.297
99NPT-105-1a	54.621	0.070	1.338	0.727	15.129	23.234	0.166	3.945	1.119	0.003	100.352
99NPT-105-1b	54.034	0.056	1.600	0.453	15.419	23.205	0.138	3.498	1.139	0.000	99.542

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-105-2	54.245	0.047	1.129	0.559	15.326	23.044	0.164	4.144	0.952	0.000	99.610
99NPT-105-3	54.474	0.009	1.270	0.761	14.874	23.165	0.201	4.732	1.001	0.000	100.487
99NPT-106-1	54.341	0.035	1.279	0.394	14.778	23.078	0.147	4.496	1.004	0.005	99.557
99NPT-106-2	54.050	0.021	0.888	0.516	15.170	23.429	0.183	4.193	0.707	0.001	99.158
99NPT-106-3	54.294	0.018	1.332	0.347	15.030	23.268	0.172	4.535	0.917	0.001	99.914
99NPT-106-4	54.206	0.030	0.848	0.743	15.063	23.343	0.220	4.132	0.774	0.000	99.359
99NPT-106-5	54.298	0.027	0.954	0.777	15.065	23.121	0.164	4.260	1.037	0.000	99.703
99NPT-106-6	54.117	0.044	1.123	0.539	15.241	23.322	0.170	4.126	0.861	0.000	99.543
99NPT-106-7	54.480	0.011	0.951	0.600	15.293	23.216	0.153	4.200	0.848	0.000	99.752
99NPT-106-9	54.115	0.048	1.657	0.647	14.940	22.486	0.169	3.927	1.225	0.000	99.214
99NPT-107-08	54.492	0.049	1.223	0.472	15.600	23.392	0.158	3.961	0.845	0.000	100.192
99NPT-107-09	54.073	0.013	1.240	0.433	15.281	23.658	0.180	4.143	0.848	0.000	99.869
99NPT-108-02	54.060	0.065	1.361	0.584	15.133	23.783	0.154	3.913	0.948	0.005	100.006
99NPT-108-03	54.290	0.014	1.219	0.550	15.241	23.572	0.243	4.279	0.987	0.000	100.395
99NPT-112-1	54.848	0.173	2.380	3.193	15.015	19.721	0.081	1.441	2.642	0.001	99.495
99NPT-115-1	54.321	0.204	1.833	2.343	15.866	20.574	0.083	1.651	2.009	0.000	98.884
99NPT-115-2	54.852	0.176	2.151	1.837	15.978	21.004	0.077	1.799	1.808	0.001	99.683
99NPT-123-01	54.247	0.028	1.528	0.369	14.772	23.279	0.203	5.097	1.049	0.001	100.573
99NPT-124-02	54.339	0.025	1.008	0.248	15.427	23.485	0.197	4.651	0.773	0.000	100.153
99NPT-126-1	54.468	0.081	0.979	0.883	15.617	23.318	0.129	3.673	0.917	0.000	100.065
99NPT-126-3	54.890	0.000	1.020	0.536	15.564	23.508	0.142	3.708	0.843	0.001	100.212
99NPT-126-4	54.603	0.019	1.040	0.508	15.433	23.601	0.130	3.646	0.932	0.004	99.916
99NPT-126-5	54.653	0.040	1.229	0.367	15.390	23.242	0.143	3.746	0.948	0.000	99.758
99NPT-127-39	54.753	0.108	0.769	2.500	16.153	21.625	0.054	2.217	1.858	0.002	100.039
99NPT-128-1	55.097	0.152	0.231	1.346	17.179	21.221	0.136	3.126	1.100	0.000	99.588
99NPT-139-02	55.028	0.061	3.258	0.528	16.154	21.321	0.052	2.055	1.672	0.003	100.132
99NPT-140-10	54.479	0.395	3.281	0.613	18.151	15.503	0.147	5.208	2.180	0.014	99.971
99NPT-145-1	54.689	0.186	3.057	3.312	14.759	19.018	0.073	1.363	2.949	0.002	99.408
99NPT-168-08	55.071	0.000	1.391	1.108	16.774	22.567	0.074	2.006	1.274	0.000	100.265

Other Pyroxenes

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-005-05	53.534	0.200	0.988	0.594	18.138	20.961	0.191	5.143	0.223	0.000	99.972
99NPT-008-04	54.052	0.343	0.902	0.959	18.683	18.829	0.175	5.943	0.497	0.002	100.385
99NPT-010-08	53.844	0.078	1.595	1.565	16.529	22.970	0.050	2.591	0.836	0.001	100.059
99NPT-010-09	53.719	0.207	1.332	0.705	17.374	23.101	0.110	3.053	0.354	0.000	99.955
99NPT-018-1	54.744	0.101	0.369	0.949	16.271	22.314	0.072	3.185	1.242	0.005	99.252
99NPT-024-1b	53.518	0.312	1.110	0.857	18.326	18.547	0.138	5.775	0.416	0.002	99.001
99NPT-027-02	53.975	0.170	0.770	0.524	17.340	23.023	0.131	4.030	0.215	0.001	100.179
99NPT-027-03	54.250	0.206	1.201	0.316	17.602	23.630	0.080	2.812	0.284	0.001	100.382
99NPT-030-03	53.851	0.344	0.853	0.766	17.900	19.332	0.184	6.233	0.446	0.000	99.909
99NPT-030-04	54.002	0.347	0.968	1.161	18.087	19.509	0.138	5.381	0.476	0.000	100.069
99NPT-030-05	54.296	0.326	0.724	0.953	18.795	18.590	0.157	5.813	0.463	0.000	100.117
99NPT-031-2	53.590	0.142	2.129	1.398	17.910	21.000	0.057	2.750	0.518	0.000	99.494
99NPT-031-3	53.466	0.341	0.857	1.081	18.345	18.777	0.168	5.470	0.451	0.000	98.956
99NPT-031-4	53.585	0.322	0.700	0.972	17.871	19.600	0.158	5.092	0.450	0.000	98.750
99NPT-032-08	53.469	0.343	0.955	1.126	18.360	19.192	0.151	5.549	0.506	0.000	99.651
99NPT-032-09	53.877	0.347	0.988	1.181	18.252	19.098	0.141	5.446	0.457	0.005	99.792

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-032-10	53.888	0.287	0.701	0.915	18.199	19.738	0.151	5.296	0.442	0.000	99.617
99NPT-033-01	53.039	0.388	1.281	1.054	17.638	18.780	0.130	6.190	0.484	0.040	99.024
99NPT-033-03	53.809	0.393	0.894	0.971	18.165	19.339	0.159	5.767	0.414	0.000	99.911
99NPT-033-04	53.908	0.362	0.810	0.863	18.137	19.866	0.160	5.320	0.460	0.000	99.886
99NPT-034-1	53.229	0.301	0.917	0.981	17.947	19.112	0.146	5.612	0.487	0.000	98.732
99NPT-034-10	53.682	0.367	0.985	1.071	17.767	19.121	0.162	5.512	0.523	0.005	99.195
99NPT-034-11	53.573	0.465	1.111	0.953	17.642	19.283	0.128	5.601	0.522	0.007	99.285
99NPT-034-2	53.550	0.386	0.978	1.119	17.990	18.770	0.162	5.743	0.508	0.000	99.206
99NPT-034-3	53.107	0.327	0.758	1.079	18.150	18.818	0.167	5.262	0.481	0.005	98.154
99NPT-034-4	52.842	0.306	1.404	1.362	17.189	19.490	0.137	5.328	0.641	0.000	98.699
99NPT-034-5	52.897	0.335	0.864	1.061	17.826	19.130	0.156	5.319	0.472	0.000	98.060
99NPT-034-6	53.385	0.389	0.980	1.138	17.752	18.913	0.166	5.697	0.506	0.000	98.926
99NPT-034-7	53.583	0.298	0.682	0.900	18.231	19.033	0.154	5.526	0.455	0.004	98.866
99NPT-034-8	53.598	0.298	0.875	1.267	17.975	19.121	0.154	5.117	0.471	0.003	98.879
99NPT-034-9	53.758	0.397	1.130	1.197	18.085	18.597	0.170	5.851	0.558	0.000	99.743
99NPT-035-02	54.409	0.271	0.655	0.953	19.157	19.035	0.170	5.214	0.428	0.000	100.292
99NPT-036-1	53.877	0.342	0.909	1.075	17.519	19.592	0.122	5.249	0.481	0.000	99.166
99NPT-040-05	53.441	0.343	0.955	1.054	17.801	19.877	0.131	5.622	0.480	0.003	99.707
99NPT-040-06	53.642	0.356	0.885	1.016	17.688	20.378	0.121	5.179	0.463	0.000	99.728
99NPT-040-07	54.232	0.152	1.188	0.638	17.202	23.007	0.077	3.160	0.448	0.000	100.104
99NPT-040-08	53.430	0.334	0.911	1.054	17.878	19.770	0.129	5.498	0.467	0.000	99.471
99NPT-041-04	53.968	0.310	0.699	0.899	18.664	19.378	0.162	5.332	0.425	0.002	99.839
99NPT-043-03	53.656	0.313	0.831	1.094	18.099	19.946	0.138	5.122	0.441	0.002	99.642
99NPT-043-04	54.669	0.003	0.386	1.121	15.044	22.068	0.261	5.032	1.523	0.000	100.107
99NPT-043-05	53.847	0.359	0.967	1.124	18.379	18.452	0.188	5.844	0.509	0.000	99.669
99NPT-045-1	54.554	0.279	0.774	1.020	18.650	18.749	0.166	5.385	0.457	0.001	100.035
99NPT-049-01	53.645	0.334	1.054	1.066	18.864	18.220	0.190	6.011	0.484	0.000	99.868
99NPT-053-1	53.812	0.341	0.901	1.142	18.204	19.070	0.136	5.305	0.474	0.000	99.385
99NPT-053-2	54.826	0.262	0.778	1.035	19.220	18.237	0.170	5.493	0.496	0.008	100.525
99NPT-053-3	54.084	0.302	0.623	0.868	18.673	18.801	0.166	5.491	0.442	0.000	99.450
99NPT-053-4	54.314	0.327	0.937	1.140	18.008	19.439	0.161	5.250	0.492	0.001	100.069
99NPT-053--5	54.903	0.324	0.913	1.042	18.044	19.182	0.152	5.577	0.470	0.000	100.607
99NPT-058-1	54.528	0.280	0.820	0.996	18.180	19.275	0.146	5.395	0.498	0.001	100.119
99NPT-069-2	54.417	0.264	0.680	0.959	18.742	18.754	0.174	5.258	0.436	0.000	99.684
99NPT-070-1	53.787	0.306	0.895	1.021	17.647	19.870	0.152	5.319	0.494	0.000	99.491
99NPT-070-2	54.076	0.301	0.811	0.975	18.137	19.175	0.144	5.494	0.492	0.000	99.605
99NPT-071-09	53.715	0.334	0.657	0.745	18.146	19.558	0.162	5.650	0.393	0.000	99.360
99NPT-072-1b	53.907	0.375	0.824	1.106	17.930	19.582	0.150	5.194	0.500	0.002	99.570
99NPT-075-03	53.160	0.356	1.035	1.268	18.630	18.996	0.139	5.439	0.506	0.001	99.530
99NPT-076	53.740	0.325	0.892	1.122	17.647	19.853	0.153	5.300	0.480	0.000	99.512
99NPT-077-01	53.082	0.364	0.999	1.089	17.850	19.578	0.140	5.384	0.497	0.003	98.986
99NPT-078-1	54.315	0.333	0.990	1.141	18.507	18.550	0.177	5.592	0.503	0.000	100.108
99NPT-078-2	53.831	0.366	0.845	1.066	17.926	19.635	0.119	5.314	0.486	0.000	99.588
99NPT-080-1a	53.160	0.136	3.057	2.205	16.761	21.608	0.087	2.903	0.800	0.001	100.718
99NPT-080-1b	54.543	0.314	0.881	1.007	19.039	18.227	0.153	5.639	0.465	0.002	100.270
99NPT-080-2	53.761	0.292	1.045	1.065	17.164	20.410	0.129	5.089	0.532	0.005	99.492
99NPT-080-3	53.979	0.314	0.914	1.096	18.088	19.672	0.146	5.534	0.507	0.004	100.254
99NPT-080-4	54.144	0.351	0.788	1.019	18.069	19.441	0.155	5.285	0.500	0.000	99.752

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	Na2O	K2O	Total
99NPT-082-1	53.745	0.396	0.972	1.204	17.537	19.826	0.153	5.436	0.536	0.003	99.808
99NPT-082-2	54.323	0.389	0.975	1.088	17.657	19.798	0.144	5.480	0.517	0.001	100.372
99NPT-082-3	54.012	0.316	0.939	1.154	17.879	19.370	0.145	5.372	0.509	0.000	99.696
99NPT-082-4	54.359	0.333	0.946	1.043	18.154	18.721	0.160	5.748	0.498	0.004	99.966
99NPT-085-12	53.637	0.377	0.882	1.080	18.036	20.019	0.139	5.219	0.487	0.000	99.876
99NPT-092-10	54.353	0.264	0.681	0.937	18.792	18.597	0.131	5.330	0.458	0.000	99.543
99NPT-092-7	54.033	0.195	1.023	0.886	17.875	20.693	0.152	4.797	0.252	0.000	99.906
99NPT-096-02	53.643	0.360	0.873	1.273	18.262	19.702	0.155	5.223	0.452	0.001	99.944
99NPT-106-8	54.141	0.288	0.668	0.879	18.578	18.662	0.140	5.486	0.441	0.005	99.288
99NPT-109-01	53.647	0.125	1.638	0.394	16.044	23.023	0.160	4.319	0.628	0.000	99.978
99NPT-112-1	53.772	0.334	0.819	1.110	17.924	19.292	0.119	5.401	0.489	0.000	99.260
99NPT-120-03	53.274	0.351	0.915	1.118	18.194	19.469	0.158	5.603	0.487	0.000	99.569
99NPT-125-01	53.566	0.364	0.746	0.887	18.353	19.660	0.155	5.579	0.440	0.007	99.757
99NPT-126-1	53.747	0.305	0.893	1.048	18.290	18.669	0.173	5.588	0.491	0.000	99.204
99NPT-126-2	52.884	0.137	2.352	1.804	17.365	19.545	0.136	3.839	0.903	0.000	98.965
99NPT-127-36	53.997	0.348	1.005	1.142	18.763	18.151	0.156	5.912	0.574	0.003	100.051
99NPT-127-37	53.300	0.337	1.304	1.335	17.051	20.803	0.131	5.131	0.528	0.000	99.920
99NPT-127-38	53.464	0.295	1.055	1.264	18.444	18.882	0.161	5.631	0.527	0.007	99.730
99NPT-128-1	54.243	0.282	0.949	1.219	18.592	18.233	0.165	5.509	0.537	0.000	99.729
99NPT-128-2	54.197	0.009	0.884	0.576	14.630	22.832	0.152	4.938	1.161	0.000	99.379
99NPT-128-3	54.377	0.303	0.709	0.892	19.015	18.572	0.181	5.458	0.457	0.000	99.964
99NPT-128-4	53.679	0.319	0.967	1.089	17.948	19.004	0.144	5.702	0.500	0.000	99.352
99NPT-128-5	53.627	0.307	0.879	1.037	17.908	19.250	0.159	5.201	0.477	0.000	98.845
99NPT-128-6	53.978	0.341	0.992	1.110	17.909	19.219	0.162	5.711	0.523	0.004	99.949
99NPT-129-1	53.913	0.348	0.944	1.083	18.084	19.435	0.167	5.329	0.435	0.008	99.746
99NPT-129-2	53.395	0.323	0.789	0.997	17.563	19.594	0.149	5.396	0.466	0.000	98.672
99NPT-129-3	53.786	0.324	0.904	1.182	18.399	18.719	0.170	5.511	0.483	0.000	99.478
99NPT-130-02	53.607	0.167	1.589	0.853	16.932	22.796	0.103	3.424	0.551	0.000	100.022
99NPT-133-16	53.629	0.348	0.889	1.218	18.230	19.581	0.147	5.081	0.485	0.003	99.611
99NPT-135-11	52.185	0.242	3.277	1.046	16.972	23.164	0.077	2.904	0.198	0.000	100.065
99NPT-135-12	53.184	0.352	0.981	1.182	18.124	19.577	0.146	5.432	0.502	0.004	99.484
99NPT-138-05	53.357	0.368	1.068	1.295	18.080	19.073	0.168	5.605	0.550	0.000	99.564
99NPT-140-09	53.570	0.306	1.032	1.227	18.147	18.996	0.159	5.548	0.521	0.002	99.508
99NPT-141-02	53.786	0.328	0.991	1.271	18.168	19.577	0.151	5.235	0.504	0.003	100.014
99NPT-145-1	53.085	0.333	1.245	1.447	16.783	20.330	0.134	4.919	0.580	0.000	98.856
99NPT-147-04	53.598	0.310	0.733	0.978	18.364	19.617	0.164	5.495	0.456	0.000	99.715
99NPT-156-1	54.108	0.325	0.840	0.809	18.001	18.675	0.164	5.941	0.463	0.000	99.326
99NPT-156-2	54.027	0.281	0.689	0.781	18.262	18.779	0.157	5.836	0.443	0.000	99.255
99NPT-163-01	53.926	0.278	0.674	0.879	19.054	18.668	0.173	5.687	0.422	0.000	99.761
99NPT-166-09	53.553	0.294	0.884	1.150	18.055	19.878	0.136	5.070	0.461	0.006	99.487
99NPT-171-11	53.047	0.230	1.140	0.638	17.356	23.321	0.091	3.379	0.214	0.004	99.420
99NPT-171-12	53.487	0.298	0.843	1.171	18.580	19.128	0.144	5.357	0.469	0.011	99.488

Olivine

Olivine with compositions similar to those found in Ontario Kimberlites (possible KIM's).

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	CoO	NiO	Total
99NPT-022-04	41.800	0.009	0.002	0.012	51.314	0.007	0.090	6.591	0.012	0.402	100.239
99NPT-032-04	40.658	0.010	0.000	0.000	48.239	0.003	0.130	10.227	0.018	0.339	99.624
99NPT-042-02	40.959	0.010	0.000	0.009	48.392	0.008	0.184	10.086	0.018	0.365	100.031
99NPT-056-03	41.301	0.010	0.000	0.003	51.086	0.005	0.084	6.852	0.019	0.345	99.705
99NPT-071-10	41.474	0.007	0.002	0.005	49.779	0.011	0.131	8.055	0.018	0.416	99.898
99NPT-085-10	41.407	0.007	0.001	0.010	50.767	0.011	0.131	7.033	0.014	0.360	99.741
99NPT-101-04	41.468	0.016	0.000	0.012	50.738	0.009	0.135	7.211	0.014	0.357	99.960
99NPT-118-03	41.091	0.007	0.000	0.003	49.364	0.004	0.128	9.097	0.017	0.386	100.097
99NPT-122-02	41.463	0.007	0.000	0.000	51.387	0.007	0.099	6.605	0.012	0.322	99.902
99NPT-136-13	41.573	0.007	0.000	0.005	51.761	0.005	0.103	6.164	0.012	0.328	99.958
99NPT-138-04	40.926	0.005	0.000	0.002	48.752	0.002	0.141	9.851	0.017	0.433	100.129
99NPT-138-06	40.952	0.001	0.000	0.003	50.506	0.003	0.106	7.613	0.014	0.491	99.689
99NPT-147-03	42.051	0.011	0.000	0.016	51.989	0.008	0.080	5.694	0.013	0.355	100.217

Olivine with Forsterite contents similar to those observed from Ontario Kimberlites, but with elevated concentrations of either CaO, Cr2O3, Al2O3 or TiO2. These compositions are not characteristic of a large majority of olivines analysed from Ontario Kimberlites.

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	CoO	NiO	Total
99NPT-012-10	40.463	0.037	0.014	0.024	47.472	0.048	0.124	10.841	0.020	0.264	99.307
99NPT-022-03	40.675	0.008	0.048	0.046	48.420	0.173	0.137	9.474	0.017	0.453	99.451
99NPT-022-05	40.744	0.010	0.018	0.078	49.975	0.065	0.110	8.073	0.020	0.394	99.487
99NPT-037-05	40.282	0.008	0.037	0.041	46.298	0.171	0.195	12.299	0.021	0.355	99.707
NPT-99-095-OL-1	40.916	0.026	0.006	0.023	50.236	0.019	0.106	8.208	0.021	0.383	99.944

Olivine from crustal sources.

Sample	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	FeO	CoO	NiO	Total
99NPT-003-OL-1	34.663	0.049	0.023	0.004	24.332	0.343	0.637	39.631	0.023	0.037	99.742
99NPT-003-OL-2	35.150	0.047	0.014	0.004	25.698	0.296	0.602	38.389	0.033	0.059	100.292
99NPT-003-OL-3	34.560	0.053	0.007	0.001	22.888	0.295	0.667	41.486	0.029	0.039	100.025
99NPT-003-OL-4	34.392	0.056	0.010	0.000	22.957	0.388	0.678	41.639	0.029	0.027	100.176
99NPT-003-OL-5	34.949	0.061	0.014	0.001	24.109	0.386	0.639	40.391	0.023	0.031	100.604
99NPT-008-05	35.296	0.044	0.011	0.000	25.244	0.206	0.630	38.398	0.023	0.074	99.926
99NPT-008-06	35.367	0.050	0.005	0.000	25.605	0.227	0.609	38.157	0.030	0.056	100.106
99NPT-008-07	35.232	0.042	0.014	0.000	24.508	0.289	0.622	39.032	0.026	0.047	99.812
99NPT-008-08	34.673	0.063	0.017	0.002	22.728	0.471	0.652	41.626	0.028	0.021	100.281
99NPT-008-09	34.753	0.047	0.009	0.000	24.990	0.220	0.622	38.703	0.022	0.060	99.426

Others

OTHERS

Sample	SiO2	TiO2	Nb2O5	Al2O3	Cr2O3	V2O5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe2O3	FeO	Total
gahnite															
99NPT-110-02	0.003	0.000	0.000	56.191	0.100	0.000	0.933	0.084	7.978	0.000	34.820	100.109	0.599	7.439	100.169
99NPT-119-GAH-1	0.019	0.006	0.000	55.422	0.000	0.000	0.575	0.081	7.187	0.000	35.908	99.198	0.650	6.602	99.263
Orthopyroxene															
99NPT-141-01	53.876	0.146	1.152	0.155	17.053	22.259	0.152	4.383	0.000	0.029	99.205	-	228	-	-
Titanite															
99NPT-164-01	29.903	37.431	1.750	0.009	0.000	27.959	0.018	0.456	0.000	0.000	97.526	-	0	-	-
99NPT-087-02	30.463	36.555	1.889	0.005	0.008	28.060	0.108	0.961	0.002	0.000	98.051	-	0	-	-
Peraluminous Silicate (Cr bearing)															
99NPT-112-CRKY-1	36.201	0.009	0.014	62.274	1.350	0.050	0.015	0.000	0.194	0.015	0.025	100.147	0.000	0.194	100.147

Others	
99NPT-076-CR-7	fe-oxide
99NPT-076-CR-9	sulphide
99NPT-056-02	Corundum

Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
			LENGTH		
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
			AREA		
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
			VOLUME		
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
			CAPACITY		
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
			MASS		
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
			CONCENTRATION		
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

***Note:** Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.*